













**SELECTIONS FROM THE RECORDS OF THE BOMBAY  
GOVERNMENT.**

No. LXXXV.—NEW SERIES.

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**P A P E R S .**

**RELATING TO THE**

**COLONIZATION OF MANDER DEO**

**AND MAKING IT A SANITARY STATION.**

  
**WITH TWO LITHOGRAPHS.**  


**Bombay:**

**PRINTED FOR GOVERNMENT**

**AT THE EDUCATION SOCIETY'S PRESS, BYCULLA.** *statement*

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**1864.**

**A.***Statement of the Goods Traffic booked at Barsee road*

Stations.	Treasure.		1st Class.		2nd Class.			3rd Class.		
	Weight.	Amount.	Weight.	Amount.	Weight.	Amount.	Weight.	Amount.	Weight.	Amount.
	M. Rs. a. p.		M. S. Rs. a. p.		M. S. Rs. a. p.		M. S. Rs. a. p.		M. S. Rs. a. p.	
Barsee Road to										
Bombay .....	....	....	....	....	206,496 39	57,917 10 2	272,495 31	46,498 14 1		
Byculla .....	....	....	....	....	27,684 26	7,538 1 8	4,034 20	2,177 10 8		
Coorla .....	....	....	....	....	35 28	9 15 1	....	....		
Tannah .....	....	....	....	....	226 15	53 0 10	24 5	11 9 1		
Callian.....	....	....	....	....	565 31	122 1 6	73 25	32 9 6		
Nassick .....	....	....	....	....	....	....	3 3	1 7 11		
Campoolee .....	....	....	....	....	2 15	1 4 10	....	....		
Khandalla .....	....	....	....	....	2,522 16	848 15 1	521 33	211 12 4		
Tulligaum .....	....	....	....	....	4,153 34	1,096 11 0	299 37	128 1 6		
Poonah .....	....	....	....	....	30,888 12	7,218 3 11	3,350 29	1,179 8 10		
Decksal .....	....	....	....	....	122-20	14 1 0	46 30	7 13 0		
Jehwoor .....	....	....	....	....	36 15	2 4 6	17 10	2 15 6		
Marheh .....	....	....	....	....	3 0	0 8 0	....	....		
Mohol .....	....	....	....	....	24 25	1 10 9	....	....		
Sholapoor .....	....	....	336 35	28 1 3	637 34	69 15 9	822 18	136 6 9		
Lanowlee.....	....	....	....	....	....	....	....	....		
Total.. ..	....	....	336 35	28 1 3	273,800 30	74,924 8 1	281,689 13	1,50,388 13 2		

*station during the half year ending 30th June 1862.*

4th Class.			6th Class.			Total.			Live Stock.	Total Merchandize.
Weight.		Amount.	Weight.		Amount.	Weight.		Amount.		
M.	S.	Rs. a. p.	M.	S.	Rs. a. p.	M.	S.	Rs. a. p.	Rs. a. p.	Rs. a. p.
7	22	5 6 1	1	8	3 12 5	179,000	32	2,04,155 10 9	....	2,04,455 10 9
....	....	....	9	0	10 5 9	31,728	6	9,726 2 1	....	9,726 2 1
3	0	1 7 0	....	....	....	38	28	11 6 1	....	11 6 1
....	....	....	....	....	....	250	20	64 9 11	....	64 9 11
....	....	....	....	....	....	639	16	154 11 0	....	154 11 0
....	....	....	....	....	....	3	3	1 7 11	....	1 7 11
....	....	....	....	....	....	2	15	1 4 10	....	1 4 10
13	2	6 7 3	....	....	....	3,457	11	1,067 2 8	722 4 3	1,789 6 11
....	....	....	....	....	....	4,453	31	1,224 12 6	....	1,224 12 6
23	30	10 12 3	4	35	3 4 6	34,267	26	8,411 13 6	137 14 9	8,549 12 3
....	....	....	....	....	....	169	10	21 14 0	....	21 14 0
....	....	....	....	....	....	53	25	5 4 0	....	5 4 0
....	....	....	....	....	....	3	0	0 8 0	....	0 8 0
....	....	....	....	....	....	24	25	1 10 9	....	1 10 9
118	12	23 11 9	....	....	....	1,915	19	258 3 6	....	258 3 6
....	....	....	....	....	....	....	....	19 13 6	....	19 13 6
165	26	47 12 4	15	3	17 6 8	556,007	27	2,25,406 9 6	880 0 6	2,26,286 10 0

**B**

## ESTIMATE OF COST OF LIGHT RAILWAY.

Rails, at 56 lbs. per yard for 1 mile . . . .	Rs. 13,200
Chairs for 1 mile . . . . .	„ 3,457
Bolts, spikes, &c. do. . . . .	„ 1,000
Sleepers do. . . . .	„ 4,400
Laying road do. . . . .	„ 3,520

For one mile . . . . .	Rs. 25,577
Add T <sup>o</sup> th for sidings . . . . .	„ 2,557
Telegraph and fencing . . . . .	„ 4,500
Superintendence . . . . .	„ 500

For one mile . . . . .	Rs. 33,134
Add for 20 miles more . . . . .	„ 6,62,680
	Rs. 6,95,814

Earthworks, bridges, drains, as per Captain Fuller's estimate, less kerbing . . . .	Rs. 1,49,293
Bridge across Seena river . . . . .	„ 86,693
Metalling 12 inches 12 feet width . . . . .	„ 54,948
	Rs. 9,76,748

Add for additional earthworks for flatten- ing gradients . . . . .	Rs. 20,000
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Total . . . . Rs. 9,96,748

Or per mile . . . . . Rs. 47,226

Interest at 5 per cent. on above per mile. . . , 2,361

**C**

The traffic booked in six months, January to July was 20,500 tons, this rate probably held for October, November, and December.

So for 9 months there were.....Tons	31,000
For the other 3, say .....	„ 5,000
<hr/>	
Total up Traffic .....	Tons 36,000
Down Traffic say.....	„ 20,000
<hr/>	
Total.....Tons	56,000
<hr/>	

At  $1\frac{1}{2}$  annas per ton, per mile.....Rs. 5,200

**PASSENGERS.**

Say 50 Third Class, and 10 Second Class each way per mile .....	„ 600
<hr/>	
Total gross receipts per Railway mile .....	Rs. 5,800
Allowing 60 per cent. working expenses in- cluding haulage .....	„ 3,480
<hr/>	
Total net profit....	Rs. 2,320
<hr/>	
Interest of cost per mile .....	Rs. 2,361

**GOVERNMENT RESOLUTION, DATED 8TH OCTOBER 1862.**

The Governor in Council concurs with the Secretary in preferring a Branch Railway, to cost 10 lacs, and would direct the Executive Engineer to proceed as rapidly as possible with the earthworks, bridges, and drains, as per Captain Fuller's estimate (minus kerbing) Rs. 1,49,293, with the additional earthworks for flattening gradients, Rs. 20,000, Secna bridge Rs. 86,693, and the metalling Rs. 54,948.



None of this will be wasted even if no rails are ever laid down. It is obvious that the existing traffic will fully pay for such a road and the exigencies of the Cotton Trade, and the necessity for finding work in a district where the early crops have completely failed, will more than justify an immediate commencement in anticipation of the sanction of the Secretary of State and Government of India, for which immediate application should be made. Copies of all these papers, including the memoranda of the Chief Engineer and Colonel Rivers, being sent.

- As regards the bridge over the Seena, Government believe the data at hand are ample to enable the Chief Engineer and Secretary to Government to decide at once, whether an iron or stone bridge will cost least and be soonest erected; whichever may be decided on, should be taken in hand at once.

With regard to the additional expense (about 7 lacs) required to convert the road so made into a railway, Government must under any circumstances, refer to the Secretary of State. It should be submitted to him, that the traffic is already so great as to require nothing less than a branch railway fitly to accommodate it, and that the necessary earthworks and bridges will be provided by the works Government have ordered.

The Secretary of State should be requested either to send out the materials required for completing the railway, as a Government undertaking, or to come to an agreement with the Great Indian Peninsula Railway Company to undertake the works, as an extension of their railway, without a guarantee, either repaying the cost of the work done by the Public Works Department, or coming to some agreement to share the profits rateably with Government, according to the expenditure of each party.

Government would express a strong opinion in favour of making over the works entirely to the Railway Company, and on liberal terms, as a favorable commencement of a system of having all needful extensions made by the Railway Companies themselves, without guarantee.

Any profits on the Branch, beyond 5 per cent. should in any case be secured as a set off to the guaranteed interest on the main line.

The way the project is got up is very creditable to Captain Fuller.

No. 5664 of 1862.

PUBLIC WORKS DEPARTMENT.

MEMORANDUM.

Having submitted to Government the Chief Engineer's memorandum No. 277, of the 23rd ultimo, with papers connected with the road from Barsee to Barsee road Railway station, the Secretary has been directed to communicate the following decision of Government.

2. That the work be carried out as per estimate No. 5, for a 24 feet road, but that the gradients be *flattened* to not less than 1 in 100, and metal be provided for a width of 12 feet.

3. The estimate will then be as follows:—

Earthwork, small bridges and drains, less	
kerbing .....	Rs, 1,49,293
Metalling .....	„ 54,498

An estimate to be called for, of the additional cost of flattening the gradients.

4. As to the Seena bridge, Government consider that it should be built to suit the 24 feet road, its height to suit the gradients of any future branch railway, and its formation strong enough for a railway. Whether the superstructure should be on iron girders, or masonry arches, Government request to be favoured with the opinion of the Chief Engineer as to the cost and probable time of erection, on both plans.

5. The Chief Engineer will perceive from the above that the road is to be constructed immediately as a carriage road, and to be capable of eventually carrying a light railway, whether the railway be constructed by Government, or by an unguaranteed company, according to the terms lately conceded to a Branch Railway Company in Bengal, (copy of which is sent) or be handed over to the Great Indian Peninsula Railway Company, are questions, which cannot be at present settled, and on which the opinion of Her Majesty's Secretary of State and the Government of India, must first be obtained.

6. The Government of India will be addressed, asking for sanction to the above scheme, but in anticipation thereof, the Chief Engineer is authorised to direct the work to be proceeded with on the 24 feet width, and the preparation of metal, a suitable work on account of the necessity of finding work in that district.

(Signed) H. RIVERS, Lieut.-Colonel,  
Secretary to Government.

*Bombay Castle, 14th October 1862.*

No. 5687 OF 1862.

PUBLIC WORKS DEPARTMENT.

To C. B. KER, Esq.,

SIR,—I am directed to convey to you the request of the Honorable the Governor in Council, that you will be so good as to prepare, for the use of Government, drawings and description of a tramway, which you may consider the best suited for a black soil country, and for bullock power, also an estimate of the cost of materials and labour, (exclusive of masonry and earthwork) in laying the permanent way, with drawings and estimate of rolling stock, sufficient for working a daily traffic of 300 tons over fifty miles.

2. His Excellency in Council will have much pleasure in remunerating you for this duty, by a grant of Rupees five hundred, should you be willing to undertake it.

I have the honour to be, &c.  
\* (Signed) H. RIVERS, Lieut.-Colonel,  
Secretary to Government.

*Bombay Castle, 17th October 1862.*

The same to A. H. LEE, Esq.,  
and G. L. CLOWSER, Esq.

No. 6000 OF 1862.

PUBLIC WORKS DEPARTMENT.

From the SECRETARY TO THE GOVERNMENT OF BOMBAY.

To the SECRETARY TO THE GOVERNMENT OF INDIA.

SIR,—In paragraph 32 of the letter from this Government No. 446, dated 25th January 1862, the Government of India were informed, that the line of road from Barsee to the Barsee road railway station, had not yet been commenced, the plan and estimate not having been approved.

Memorandum by the Chief Engineer at the Presidency, No. 277, dated 23rd September 1862, with accompaniments.

Memorandum by the Secretary to Government, Public Works Department, dated 26th September 1862, with accompaniments.

Minute by His Excellency the President, concurred in by the Honorable Board.

2. This Government have since had under consideration the advisability of constructing a tramway between these places, and I am instructed to submit copies of papers as per margin, wherein the fol-

lowing projects are submitted and discussed, viz:—

	Estimated Cost.
Road 20 feet moorumed without bridge at Seena.	Rs. 1,55,000
Road metalled Ditto	.. „ 1,99,000
Road 24 feet moorumed .....	„ 1,66,000
Road metalled .....	„ 2,21,000
Bridge for 21 feet roadway .....	„ 87,000
Tramway 12 feet wide including bridge 12 feet wide .....	„ 5,17,000
But if the latter is made 20 feet wide an addition of .....	Rs. 17,000 „ 5,34,000

3. I am directed to solicit the attention of the Government of India, to the facts set forth in the Secretary's memorandum, and

to state that this Government generally concur with him in preferring a light railway, at an estimated cost of 10 lacs of Rupees, to the tramway.

4. But as to the agency to be employed for the railway, whether Government shall undertake it, or a Company, under terms similar to those proposed to be given in Bengal, and forwarded with your letter No. 3642, dated 18th September, 1862, or, whether to offer it to the Great Indian Peninsula Railway Company, are questions on which this Government cannot decide on its own authority. A copy of the Despatch which has been addressed to the Secretary of State on the subject, is annexed.

5. In the meantime, however, the necessity for a road remains, the existing traffic calls for a good metalled road, and will fully pay for it, and it seemed only necessary that this Government should take care that the works which were undertaken for the road were such as would eventually be utilized should rails ever be laid on it.

6. At the present moment too the exigence of the cotton trade, and the necessity for finding work in a district where the early crops have completely failed, all required some immediate action to be taken, and have induced the Government of Bombay to give sanction to the progress of the works, on the scale above described, in anticipation of the approval of the Government of India.

7. His Excellency in Council has therefore directed the commencement of the road 24 feet wide, as described in estimate No. 5, and pending the receipt of the sanction of the Government of India, has signified his approval of that design and estimate.

8. It will be necessary to flatten the gradients, which Captain Fuller reports could easily be effected to at least 100, and estimates have been called for as to the additional cost required for this purpose.

9. With respect to the proposed bridge over the Seena river, this Government are of opinion that it should be built to suit the 24 feet road, its height to suit the gradients of any future branch railway, and its formation strong enough for a railway.

10. To enable Government to decide whether the superstructure of this bridge should be on iron girders, or masonry arches, informa-

tion is awaited from the Chief Engineer at the Presidency, as to the cost and probable time of erection on both plans.

11. I beg the return of the plans and estimates when no longer required.

I have the honour to be, &c.

(Signed) H. RIVERS, Lieut.-Colonel,  
Secretary to Government.

*Bombay Castle, 12th November 1862.*

No. 732 OF 1862.

RAILWAY DEPARTMENT.

To the ACTING SECRETARY to the Great Indian Peninsula Railway Company.

SIR,—I am desired to request that the Committee of Directors of the Great Indian Peninsula Railway Company will favour Government as early as possible, with the opinions of their Chief Resident Engineer, regarding the description of tramways and rolling stock to be used thereon, best adapted as feeders to the present system of railways in India.

I have the honour to be, &c.

(Signed) R. MALCOLM, Major,  
Deputy Secretary to Government.

*Bombay Castle, 16th July 1862.*

No. 733 OF 1862.

RAILWAY DEPARTMENT.

To the DEPUTY CONSULTING ENGINEER for Railways in Guzerat.

SIR,—I am desired to request that you will address the Agent of the Bombay, Baroda and Central India Railway Company, with a

view to obtaining for the early information of Government, the opinion of the Chief Engineer of the Company, regarding the description of tramways and rolling stock to be used thereon, best adapted as feeders to the present system of railways in India.

I have the honour to be, &c.

(Signed) R. MALCOLM, Major,  
Deputy Secretary to Government.

*Bombay Castle, 16th July 1862.*

No. 734 of 1862.

#### RAILWAY DEPARTMENT.

To the ACTING DEPUTY CONSULTING Engineer for Railways in Sind.

SIR,—I am desired to request, that you will address the Agent of the Sind Railway Company, with a view to obtaining, for the early information of Government, the opinion of the Chief Engineer of the Company regarding the description of tramways, and rolling stock, to be used thereon, best adapted as feeders to the present system of railways in India.

I have the honour to be, &c.

(Signed) R. MALCOLM, Major,  
Deputy Secretary to Government.

*Bombay Castle, 16th July 1862.*

No. 3358 of 1862.

To Lieut.-Colonel H. RIVERS,

Consulting Engineer for Railways.

SIR,—With reference to the letter from the Officiating Consulting Engineer No. 732, of the 16th July last, I am instructed to forward,

for submission to Government, the accompanying copy of a communication, from the Acting Chief Resident Engineer, dated the 23rd ultimo, reporting upon the description of tramways best adapted as feeders to the present system of railways in India.

2. I am at the same time to add that the Committee concur in the views entertained by their Officer.

I have the honour to be, &c.

(Signed) W. R. HOARE,  
Secretary.

*G. I. P. R. Co.'s Office,  
Bombay, 15th September 1862.*

To G. A. BARNETT, Esq.,

Acting Secretary, Great Indian Peninsula Railway Company.

SIR,—I have the honour to acknowledge the receipt of your letter, No. 2672, of the 18th ultimo, calling upon me to report upon the description of tramways, best adapted as feeders, to the present system of railways in India.

2. The general question of feeders to railways, must depend greatly on the physical character, the extent of the population, and the nature of the traffic of the country through which they are to pass, and as these of course vary greatly in different parts of India, the observations I have to offer, will have reference only to the description of feeders best adapted, in my opinion, to the Great Indian Peninsula Railway system.

3. Feeders may be divided into three classes, viz. tramways, branch railways, and common roads.

4. The term tramway, according to its usual acceptation, implies a roadway following as closely as possible, the natural surface of the ground, and laid with rails adapted for light waggons, worked by cattle power, such I believe to be the description of road contemplated in the prospectus of the Indian Tramway Company, Limited, wherein it is stated that the average cost of their tramways will not



exceed £2,800 per mile, and that it is proposed to work the traffic with bullocks and the passenger traffic with carriages and horses.

5. It is very possible that this description of feeder may answer well for the level and populous plains of Guzerat, lower Bengal, and other parts of India of a similar character, but it appears to me that it is not well adapted to the districts through which the Great Indian Peninsula Railway passes, where steep gradients are unavoidable, and the country is intersected by rivers and streams whose channels lie deep below the general surface of the country.

6. The effect of these steep gradients by limiting the cattle power, would be to increase the rolling stock, and live stock of any company, to an extent which in my opinion would prevent tramways from competing successfully with the ordinary carriage of the country, and the breaks at the larger rivers, which would be unavoidable, if the tramways were constructed at any thing like the sum named per mile, would place them at a still further disadvantage.

7. It appears to me that there is moreover a serious objection to tramways, in a country of steep gradients, in the great risk and danger attending the working of trains without the control of engine power.

8. The Tramway Company, it is true, proposes to work the passenger traffic with light engines where practicable, and a Government Notification inviting tenders for the construction of a tramway in a Ghaut district, specifies, that it is to be capable of being worked by locomotive power.

9. The Tramway Company apparently contemplate working with light engines, only when suitable gradients can be obtained without expensive work, and I have no doubt that this could be done with advantage on such a line, without otherwise deviating from the usual characteristics of a tramway, but when in the construction of a line capable of being worked at all with locomotives, expensive works common to a more substantial description of railway are unavoidable, I cannot think it advisable to lay down a superstructure suited only for the class of engines least adapted for working a bulky traffic over steep gradients and introducing on to branch lines all the expense and inconvenience of a break of gauge.

10. Tramways then, in my opinion, are not generally adapted as feeders to the Great Indian Peninsula system of railway. I believe that if worked by cattle power the extent and expensive nature of the rolling and live stock, especially for a fluctuating traffic, together with the heavy loading charges consequent on breaks in the line, would prevent them competing successfully with the country carriage, and that serious risk would attend the working of the trains on the steep inclines. If made capable of being worked by locomotive power, I maintain that the first outlay would approximate closely to that of a branch railway, without the advantages arising from a common rolling stock and a continuous gauge.

11. I am of opinion that where the traffic justifies the construction of a railway, it should be made as economically as possible, but to the same gauge and weight of rail, as the trunk line, so as to admit of the free interchange of the traffic and rolling stock, on which the economy of transport greatly depends; and I believe it will be to the interest of the Company, to encourage the construction of such branches, by offering the use of their rolling stock on the most favourable terms, or even by granting the free use of it on short branches, charging only for the cost of haulage.

12. Some such policy might probably lead to the construction of branches, by those interested in the produce of the districts, who would thus be relieved from the necessity of providing rolling stock, with the advantage of a fixed rate of working expenses.

13. Such branches however would be comparatively few, and connecting only the most important sources of traffic with the trunk line, would not alone serve as feeders to the railway.

14. Other feeders are required, and in my opinion should be of a description calculated at once to develope and turn to account, the large amount of cheap carriage already in the districts, swelled as it must be by the carriage formerly employed on the great thoroughfares to the port of Bombay, and which the trunk lines have now in a great measure superseded.

15. This object would be most effectually attained by a well-organized system of ordinary roads, to be constructed from the chief villages in every district, to the main road, the branch railways and

the stations on the trunk line, and those who have seen the effect on the traffic of a district, even by the formation of cleared roads through jungle districts, cannot doubt the efficiency of properly constructed roads, as feeders to railways and their branches.

I have the honour to be, &c.

(Signed) R. W. GRAHAM,  
Acting Chief Resident Engineer.

*Chief Resident Engineer's Office,  
Poona, 23rd August 1862.*

(True Copy.)

(Signed) W. R. HOARE,  
Secretary.

## PERMANENT WAY AND ROLLING STOCK FOR TRAMWAYS IN INDIA.

To H. F. WHYTE, Esq.,  
Acting Agent B. B. & C. I. Railway Offices, Surat.

I have the honour of forwarding to the Acting Agent, drawings to show what I think would be the most suitable permanent way, and what I consider should be the ruling gauge and general design for all rolling stock on Indian tramways.

1st.—I would have wrought iron bridge rails, with flanges, wide enough to form its own sleepers, see full size section, drawing No. 1.

2nd.—A 2 feet 9 inches gauge, with tie bars of T iron as shown on drawings Nos. 1 and 2, these bars should also act as fish plates, and round intermediate tie rods, as shown on drawing No. 1.

3rd.—The general design for rolling stock as shown on drawing No. 1, drawings Nos. 2, 3 and 4; show the same in detail.

*Estimate Weight and Cost of Iron Track.*

Rail, 22 lbs. to the yard.

Tie Bars (each) 10·3 lbs.

Tie Rods, (each) 2·5 lbs.

Bolts, 8 to the lb.

so that the total weight of track per mile will be 38 tons 6 cwt. 3 qrs. 16 lbs. Now taking the whole to cost, with the exception of the bolts and nuts, when placed on any particular district in India, say Rs. 150 per ton, and bolts and nuts annas 6 per lb., this will make the total track per mile to cost Rs. 5,845.

Then the cost of laying the rails we may put down at Rs. 200 per mile.

Thus the total cost of iron track when laid, will amount to Rs. 6,045.

*Note.*—There is more than one half the bearing surface presented to the ballast with this design of rail and tie bar, than what Adams' No. 1 suspension girder rail presents when used for railways. On the Bombay, Baroda and Central India Railway, we have engines about 33 tons weight, running over Adams' rail with about 12 tons on one pair of wheels, while the weight on one pair of wheels on this tramway would never exceed 35 cwt.; this comparison in the proportions of bearing surface to load, is based on the understanding that these tramways will be worked by bullock power and that there will be no engine power applied; if therefore it is thought that the rails will be too expensive, they and the tie bars may safely be reduced in size and weight.

*Estimate Weight and Cost of Waggon which should be used as a standard for all class vehicles.*

Estimate weight of waggon, total 1 ton 13 cwt. 3 qrs. 12 lbs.

Estimate cost of waggon, when placed in rails in India, Rs 650.

The peculiarities of this waggon are as follows :—

1st.—From its great length it will be able to carry almost any sort of load.

2nd.—Its adoption to taking the quickest curves by being carried on Bogie frames or trucks, working on a main centre pin.

3rd.—Its being kept very low so as to admit of easy loading, besides having a low centre of gravity; these points are gained by having the truck made of wrought iron.

4th.—In any collision the trucks are so arranged, that they will stand little chance of being damaged, so that we may say the body of them will last any length of time, and they can be sent out from England in complete working order. I have shown no break on the waggon; on tramways with heavy gradients a simple break can be very easily fitted on.

From the fact of this waggon being on 8 wheels and these under Bogie frames, there will be a great saving effected in the tear and wear of the permanent way, over any other waggon that might be used, and to adapt this waggon to any particular class of goods, the sides of upper frame have only to be altered, and to carry native passengers, all that is necessary would be to raise a canvass covering over-head on a few uprights, and thus it might carry passengers with all their personal luggage quite comfortably.

N.B.—I think that you will find that this description of waggon will carry more paying weight in proportion to dead weight of waggon, than ordinaries do.

This waggon is designed to carry 5 tons.

(Signed) G. N. ANDERSON,  
Locomotive and Carriage Superintendent.

No. 1822 OF 1862.

From the AGENT Sind Railway Company,  
To the DEPUTY CONSULTING ENGINEER for Railways in Sind.

SIR,—I have the honour of forwarding for the information of Government, as requested in your No. 2389 of 1862, the opinions of the

Acting\*Chief Engineer and Locomotive Superintendent upon the description of tramways and rolling stock, &c.

I have the honour to be, &c.  
(Signed) GEORGE RAWLINSON, Agent.

*Kurrachee, 25th October 1862.*

No. 1333 OF 1862.

From the ACTING CHIEF ENGINEER,  
Sind Railway Company.

TO GEORGE RAWLINSON, Esq., Agent.

SIR,—Referring to your endorsement No. 1286, I have the honour to state that before making the report asked for by the Consulting Engineer for Railways, I am anxious to make trial of one of the Tank Engines in use on the Harbour works, on the Quarry branch. Circumstances have hitherto prevented our making the trial, but there will be no difficulty to the matter from the 17th proximo, when it is intended to reduce the number of Harbour works stone trips.

I have the honour to be, &c.  
(Signed) T. G. NEWNHAM,  
Acting Chief Engineer.

*28th August 1862.*

( True Copy.)

(Signed) GEORGE RAWLINSON,  
Agent.

No. 1605 OF 1862.

From the ACTING CHIEF ENGINEER,  
Sind Railway Company.

To the AGENT, Kurrachee.

No. 1286, dated 24th July 1862,  
on letter from Consulting Engineer's  
No. 734, dated 16th July 1862, as  
to rolling stock and permanent way  
on branch lines.

SIR,—I have the honor in compliance with instructions received under your endorsement as per margin.

These branches would carry a similar class of goods to those carried on the main line.

I would not advocate the employment of special trucks for working the traffic, but precisely the same description as those now in use on the main line, so that goods loaded on the branches might be sent on to the stations to which they were consigned, without the cost and delay attending trans-shipment at the junction with the main line.

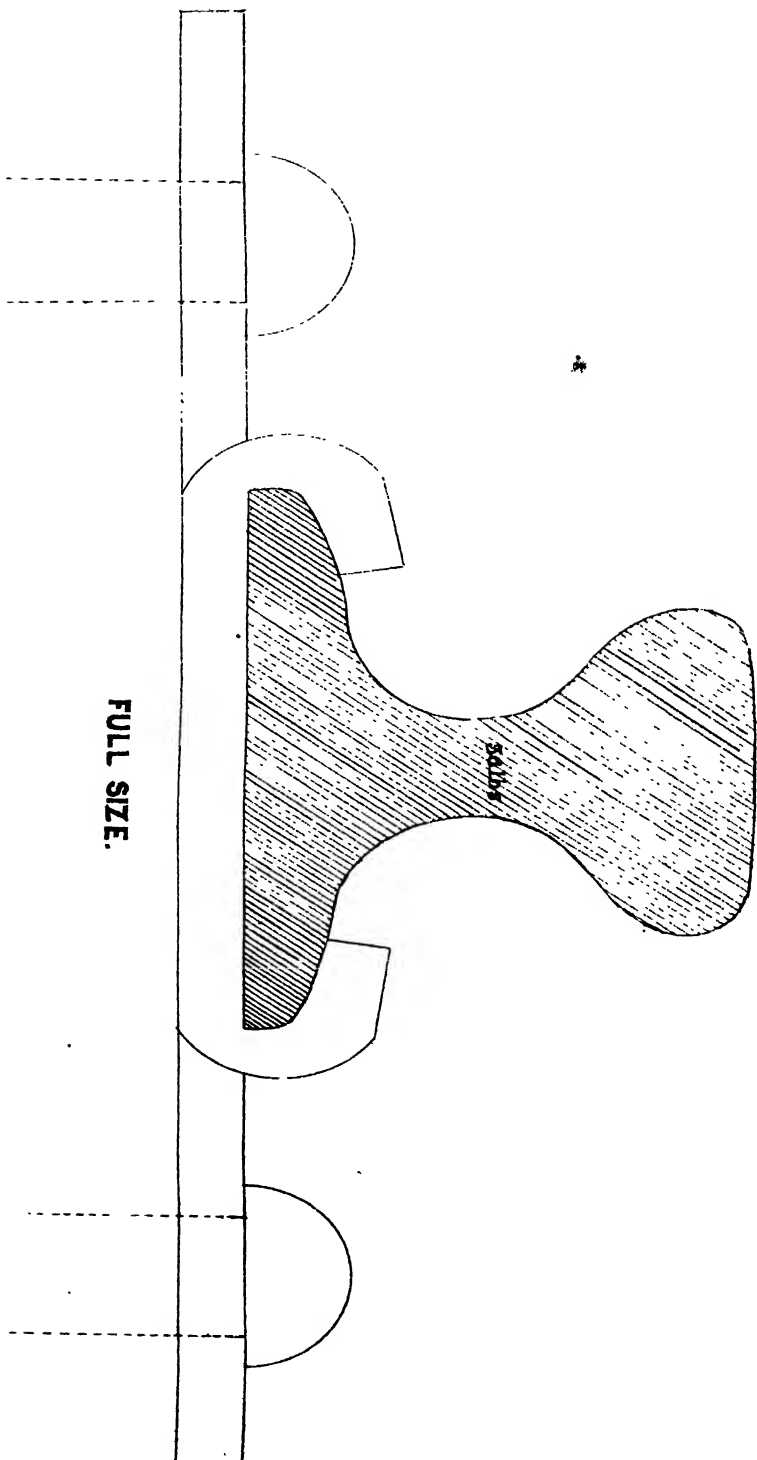
As regards permanent way, the cheapest that could well be used would consist of rails 36 lbs. to the lineal yard of the section shown in the sketch. These would be spiked on to cross sleepers, and would not require either chairs or fish plates.

The joints would be kept in place by wrought iron plates, turned up at the edge, to lap over the lower flange of the rails as shown in the sketch.

This description of road could not be laid for less than Rs. 20,000 per mile ; including ballasting.

The permanent way used on the main line, costs including ballasting Rs. 32,000 per mile, making a difference in favour of the former Rs. 12,000 per mile.

If the traffic were sufficient to demand the works to be of a substantial character, the above saving would be but small in comparison to the whole cost, and when, from the country through which the branch should pass being liable to be flooded during the annual rains, it might be considered desirable to lay the road, generally, on the surface of the land, the ordinary fish plate rail would be more suitable, partly owing to the difference of weight, and partly to the fish plate joint which is much superior to any description of joint hitherto used with the lighter rails.







Further, the employment of light rails would necessitate light engines, which could not always be worked with advantage.

The branches would chiefly act as feeders of the down traffic, and as the through train would necessarily bring full loads, the goods brought on to the main line, could be run on to the terminal station by the branch line engine, more economically than by other means ; and as it is most desirable to reduce the number of trains as far as practicable, the ordinary engines would be more suitable than light engines for the work.

Under these circumstances, I would recommend that the same description of permanent way and rolling stock, both engines and trucks should be used on the branches and main line. Where branch lines pass through hilly country, necessitating sharp curves and steep gradients, it has been found by trials made on the quarry branch, that the engines best adapted are 6 wheeled or 4 wheels coupled.

Light four-wheeled engines though best adapted for sharp curves, do not answer at all, one of this description weighing 18 tons was found capable of pushing up 12 waggons only, and that with great difficulty, whereas the six-wheeled engine takes with ease, double that number.

On the quarry branch, light rails were originally laid on the Harbour works portion, but they have been found too weak on the steep gradients and sharp curves.

Local circumstances may in some cases call for an altered system, but as a rule, I think that it will be found advantageous to use the ordinary fish plate rail, in preference to the lighter rail, as well as the ordinary goods engine, in preference to light engines on branch lines, as well as the ordinary trucks, where the branches are to facilitate the conveyance of the raw produce of the country to the sea-port.

I have the honour to be, &c.

(Signed) T. G. NEWNHAM,

Acting Chief Engineer.

*Chief Engineer's Office, Kurrachee, 22nd October 1862.*

No. 805 of 1862.

TO GEORGE RAWLINSON, Esq.,  
Agent Sind Railway.

SIR,—In reply to the inquiry in the Consulting Engineer's letter No. 734 of 1862, bearing your endorsement No. 1287, I have the honour to submit the following suggestions for the construction of tramways.

The gauge of the line should be the same, and the waggons and carriages of the same construction as those on the Indian railways.

This would enable goods to be carried without trans-shipment, from the branches to the main lines, and *vice versa*, and allow the rolling stock, except the engines, to be used as occasion might require, on the main line or the branches.

The locomotives to weigh about 11 or 12 tons in working trim, and should be carried on 4 wheels, about 3 feet in diameter.

These would work well at low speeds on sharp curves, and moderate gradients, and allow of rails of from 35 to 40 lbs. per yard being used.

The importance of having the carrying stock the same as that of the railways is obvious, as great inconvenience and loss must necessarily arise at junctions by having goods discharged and reloaded.

I have, &c.

(Signed) E. SNOWBALL,  
Locomotive Superintendent.

*Locomotive Superintendent's Office, Kurrachee,*  
16th October 1862.

(True copy.)

(Signed) GEORGE RAWLINSON,  
Agent.

*Tramways.*

To Lieut. Colonel HARRY RIVERS,  
 Secretary to Government,  
 Public Works Department.

SIR,—I have the honour to acknowledge the receipt of your letter No. 5688, of the 17th October 1862, requesting me to prepare, for the use of the Government, drawings and descriptions of a tramway which I may consider best suited for a black soil country, and for bullock power, also an estimate of the cost of materials and labour (exclusive of masonry and earthwork) on laying the permanent way, with drawings and estimate of rolling stock sufficient for working a daily traffic of 300 tons over fifty miles.

I have accordingly prepared the drawings and estimates, herewith enclosed.

I have adopted the 5 feet 6 inches gauge, because bullocks are most advantageously worked in pairs, and at any gauge materially less than 5 feet 6 inches there would not be room for them to walk between the rails. If the gauge were reduced say to 3 feet 6 inches, and the bullocks made to walk outside the rails, a width of embankment and ballast sufficient for them to walk on, must be provided, and no saving in the road would be effected. The waggons, though individually cheaper, would not be suitable for carrying grain, cotton, or light goods, though well adapted for a mineral traffic. It may also be an advantage of the 5 feet 6 inches gauge, that the waggons, and even passenger carriages of first class railways, might on emergencies be run on the tramway.

I have adopted a bridge rail of 27 lbs. per yard, spiked down to longitudinal sleepers with a cross sleeper every 10 feet. This gives a bearing surface equal to that of ordinary cross sleepers 3 feet 4 inches apart, while it is disposed in a way better adapted to bridge rails and to the peculiar traffic, cross sleepers close to the surface being inadmissible. The longitudinal sleepers are not continuous,

but two feet apart, tied together to preserve the gauge by one cross sleeper for each pair, or two cross sleepers for each length of rails which I would have made in 20 feet lengths. There is a fish plate of wrought iron with a  $\frac{1}{4}$  inch projection fitting the inside of the rail. The fish plate is bolted down to the cross sleeper, preserving effectually the gauge at the joints. This road would be very easily laid and kept in order. The ballast is 12 inches deep below the bed of the longitudinal sleeper, and 4 inches thick above that level.

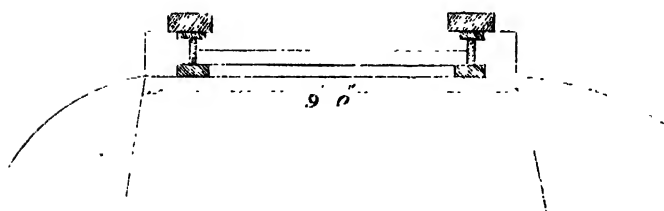
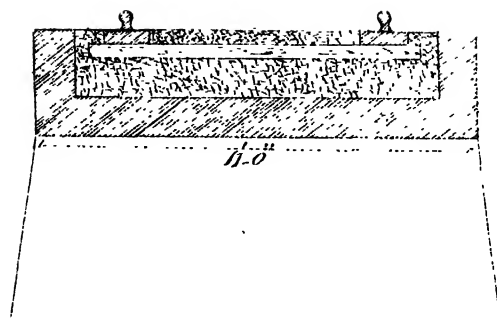
The earthwork is 14 feet wide. I have estimated it to average 3 feet deep, with gradients of 1 in 100, this of course depends on the nature of the ground.

The bridges when arched, and the culverts, should be 11 feet wide, bridges with iron girders need not be more than 9 feet wide at the top, with a batter at the ends of the piers and abutments 1 inch to the foot, and a batter at the sides, of 1 inch in 3 feet; as in the sketch.

It is necessary to take into consideration the method of working the traffic, so as to design the rolling stock and station arrangements to suit it.

I assume the ruling gradient to be 1 in 100; one pair of bullocks will draw up this three tons, working eight hours, and travelling  $12\frac{1}{2}$  miles a day, or one-fourth the distance. There should be a passing place every  $6\frac{1}{4}$  miles, where the bullocks should be changed, returning to the same shed every night. A truck thus at  $1\frac{1}{2}$  miles an hour in 8 hours goes  $12\frac{1}{2}$  miles, so much delay would occur at the passing places, that a waggon would probably not go more than two stages a day, taking four days to fifty miles, with a double tramway it might be taken in three days, or perhaps even in two.

I have made the waggon to carry two tons, they weigh nearly one ton each, making a gross load of three tons; one pair of bullocks will take one loaded waggon on a line with gradients of 1 in 100. They will take two up gradients of 1 in 330, or three on a level line. Care should therefore be taken to keep the gradients as flat as 1 in 330 in as many stages as possible.





I estimate the cost of this tramway for bullocks as follows

1. *Permanent way, per mile.*

Ballast, $11' \times 1'-4'' = 2868$ cubic yards,			
at 10 annas .....	Rs.	1,792	8 0
Rails, 27 lbs. per yard = 42 tons, 8 cwt.			
64 lbs. at Rs. 100 .....	„	4,242	14 0
Sleepers, $1,584 \times 8' \times 8'' \times 3\frac{1}{2}$ , 2464			
cubic feet, at $\frac{1}{4}$ .....	„	3,080	0 0
Spikes, 16 cwt. ....	} 49.5. at Rs. { 20	„	991 3 2
Bolts and washers, 13 cwt. ....			
Fish plates, 20 cwt. 5 lbs. ....			
Rail laying 1760 lineal yards, at 9 annas ..	„	990	0 0
		11,106	9 2
Add 10 per cent. .... *		1,110	6 10
			<u>12,217</u>

2. *Other Works, Station, &c. per mile.*

Earthworks, 14 ft. formation, 3 ft. high, 10853			
cubic yards, at $4\frac{1}{2}$ .....	Rs.	3,052	
Masonry .....	„	3,000	
Stations, passing places, and level crossings ..	„	1,000	
Engineering, Surveying, &c. ....	„	200	
Total cost of works. ....	Rs.	7,252	
Add 10 per cent. for contingencies. ....	„	725	
			<u>7,977</u>

3. *Plant.*

For gradients of 1 in 100, and a daily traffic of  
300 tons over 50 miles (say 180 tons in one  
direction and 120 in the other.)

Waggons, at Rs. $290 \times 3\frac{1}{2} =$ .....	Rs.	5,510	
Bullocks, at Rs. 80 per pair $\times 3\frac{1}{2} =$ .....	„	1,280	
Total. ....	Rs.	6,790	
Add 10 per cent. ....	„	679	
			<u>7,469</u>
Total cost of Railway, Station and Plant. ....			<u>27,663</u>



Add inland carriage, rails, fish plates, &c . . . . .	Tons	44-8
Do. for ridings 10 per cent . . . . .	,,	4-5
Waggons . . . . .	,,	17-7

Total per mile.....Tons 65-0

The working expense will be :—

### Management.

1 Manager per day .....	Rs.	15		
9 Station masters .....	,,	10		
28 Pointsmen and posters .....	,,	7		
9 Bullock mucedums .....	,,	9		
6 Clerks .....	,,	5		
		<hr/>		
	Rs.	46	=	
				Per Ton pies dec.
				Per Mile pies dec.
Haulage $\frac{800 \times 12 \times 12}{300 \times 50}$ .....				7.68
Oil, tallow and waste .....				0.30
Repairs of waggon, &c. ....				1.00
				<hr/>
				8.98
Maintenance of way rails .....				1.00
Road .....				1.10
				<hr/>
				2.10
				<hr/>
Total per ton per mile.....				Pies 11.67

Five per cent. on cost of Line—

Permanent way .....	12,217 = 1·086	
Works, &c. ....	7,977 = ·709	
Plant .....	7,469 = ·664	
	<hr/>	2·46
	27,663	
5 per cent. on inland carriage, say 67 tons, at .....	Rs. 20 = 1,340	
	<hr/>	0·12
		<hr/>
Total per ton per mile .....	Pies 14·25	

With gradients of 1 in 330. If the cost of the works were not increased this would be reduced to 10 pies.

It will be seen from the estimate above, how large a proportion the working expense of such a line bears to the interest on the capital.  $14\frac{1}{4}$  pies per ton per mile, seems to be the cheapest rate at which goods could be carried, by bullock power, over such a line with gradients of 1 in 100. I do not think, however, that so great a traffic can be worked advantageously over so great a distance, by a single line of bullock tramway; the pace is so slow, that a double line is necessary to work a considerable traffic. This would cost more than a locomotive railway. I write with some hesitation on this point. I have no great experience of the working of bullocks on a tramway; but I would not expect a better result than I have stated above; my own opinion of bullock power is, that it is more expensive than engine power, that it cannot be advantageously applied where there is sufficient traffic for an engine, say 60 tons over 40 miles. I am confident that a traffic of that amount even, could be worked at a less cost and at less charges of course, by engine power than by bullocks; and the weight of the trains can be better arranged according to the gradients and engine power, than it can be with bullocks.

The tramway, of which I have the honour to enclose drawings, would even be better worked by small engines of about 9 tons weight, with 8 inch cylinders, and 2 feet 6 inch wheels; these would draw 160 tons on a level, or 44 tons up 1 in 100, and would cost in Bombay, about Rs. 10,000. I believe that goods would be carried by these engines at  $10\frac{1}{4}$  pies per ton per mile, over gradients of 1 in 100.

I have drawn out a waggon for carrying unpressed cotton; it will carry 27 bales, or two tons, the waggon itself will weigh 1 ton, 5 cwt., and will cost Rs. 340, which is more than the ordinary waggon, therefore unpressed cotton should be charged about 16 pies per ton per mile.

I beg leave now to submit drawings and an estimate of the cost and working expenses of a light railway, to be worked by locomotive engines, and to state, that I consider this better suited than a

bullock tramway to the traffic which you have mentioned. For it is very little more expensive in first cost, and much more economical to work.

Referring to the drawings, it will be seen that the rails are 45 lbs. to the yard, fished in the usual manner, and fixed in cast iron chains on cross sleepers, 3 feet 3 inches apart. The sleepers may be half round. I have allowed for this in the price, but measured them as square. The width of formation is 16 feet, the ballast is 12 inches deep below the bed of the sleepers, with 7 inches above that level.

The arched bridges and culverts are to be 11 feet in width, with the same batter as those for the tramway. The girder bridges 9 feet wide. A small station, and a third of a mile of sidings, is provided at every 10 miles.

The engines to be tank locomotives, with 12 inches cylinders, and 18 inches stroke, six wheels, 3 feet diameter complete, extreme centres of wheels, 10 feet 3 inches. The tank to carry 500 gallons.

Such an engine will weigh 16 tons in working trim, it will draw 425 tons on a level, 250 tons up 1 in 330, or 130 tons up 1 in 100, and will cost in Bombay Rs. 15,000.

The ordinary waggons are designed to carry six tons, they will weigh 2 tons 15 cwt., and cost Rs. 780 each. The waggon for unpressed cotton will carry 72 bales,  $5\frac{1}{2}$  tons, it will weigh 3 tons 16 cwt. and cost Rs. 1,100.

I am not sure that it would not be more convenient to make these cotton waggons only 25 feet long. They would carry 60 bales, or  $4\frac{1}{2}$  tons, and would weigh 3 tons 8 cwt. and cost Rs. 1,000.

The gross weight of each loaded waggon would then be nearly 8 tons, which is perhaps enough for so large a truck.

The cotton waggon being more expensive than the others, particularly in proportion to the weight carried, it will require higher rates than other goods, to pay. I calculate that for this reason, unpressed cotton should be charged 10 pies per ton per mile, when conveyed by locomotive railway of this class, the price usually paid by cart is  $2\frac{1}{2}$  annas per ton per mile.

The following is an estimate of the cost and working expenses of a light railway, gradients 1 in 100, to be worked by six-wheeled engines, weighing 16 tons.

1 Permanent Way.		Rs.	Rs. a. p.	Rs. a. p.
Rails 45 lbs. per yard. .... Tons.	70.14.32	100	7,071 7 0	
Chains (3 feet 3 inches apart)				
13½ lbs. .... "	19.12.0	75	1,470 0 0	
Spikes, No. 6500 .... Cwt.	27.27			
Fishplates 812 .... "	27.55			
Bolts 1624 .... "	13.05			
	Cwt. 67.87	20	1,357 6 5	
Sleepers 9' x 8' x 4' .... C. ft.	3250	1	3,250 0 0	
Rail laying and keys .....	1760	as. 10	1,100 0 0	
Ballast 11. 7½ x 1. 7 .....	40.40	as. 10	2,525 0 0	
Add 10 per cent. ....	....	....	16,773 13 5	
			1,677 2 7	18,451 0 0
Earthwork, 16 ft. wide at top 3 ft. deep .....	12026	as. 4½	3,382 5 0	
Masonry .....	....	....	4,000 0 0	
Stations and passing places and level crossings .....	....	....	1,000 0 0	
Engineering and Surveying .....	....	....	200 0 0	
Add 10 per cent. ....	....	....	8,582 5 0	
			858 11 9	9,441 0 0
Plant—traffic 180 tons net in one direction and 120 tons in the other .....				27,892 0 0
Waggons, running .....	60			
standing .....	60			
repairing .....	10			
	130	Rs. 0 0	2,028 0 0	
Engines, running .....	4 }			
standing .....	2 }	1,500 0 0	1,800 0 0	
Engine sheds and houses .....	....	Rs. 0 0 0	400 0 0	
Add 10 per cent. ....	....	....	4,228 0 0	
			422 0 0	4,650 0 0
Add inland carriage, rails, chains, bolts, &c. ....	94			32,542 0 0
Do. Do. for sidings ..	5			
Engines and waggons .....	12			
	111			

*Working expenses of a Light Railway with gradients of 1 in 100.*

<i>Management.</i>			Per ton per mile pies.	
1 Manager .....	Rs. 15			
{ 2 Station Masters at 2 Rs. ....	„ 4			
5 Do. at 1 „ ....	„ 5			
24 Pointsmen. ....	„ 6			
6 Clerks .....	„ 6			
	—			
	36 ×	192		
	300 ×	50	0·46	0·46
Wages—6 Engine drivers and firemen .....	72			
Water drawers. ....	8	80 × 192		
		300 × 50	1·02	
Coke, coal and wood .....			1·80	
Oil, tallow and waste .....			0·20	
Repairs of engines and waggons .....			0·66	3·68
Maintenance of way .....			1·20	1·20
Five per cent. on cost of Line—				5·34
Permanent way .....		18,451	1·64	
Works, &c. ....		9,441	·83	
Plant .....		4,650	·41	2·88
		32,542	....	8·22

With better gradients the expense would be less, for at 1 in 330 the working expenses, management and maintenance would be about 4 pies, the reduction in plants would reduce the proportion due to interest to 2·67, making a total paying price of 6 $\frac{2}{3}$  pies per ton per mile.

On the other hand, if the improved gradients were obtained by an increase in the earthwork and masonry, an allowance must be made for that.

In all these estimates I have used prices at which the work could be readily carried out by the agency of contractors.

The prices of course would vary in different localities, as would also the amount of work to be done, but I think that the estimates above will be found very near the average cost of such lines, if constructed in India.

The engines are intended to travel only at the rate of 10 miles an hour, but they are quite capable of working a lighter traffic, even at twenty miles an hour, if required, only in this case the line should be properly fenced.

I have the honour to be, &c.

(Signed) ALEX. H. LEE.

*Oomrawultee, 24th November 1862.*

No. 6411 of 1862.

PUBLIC WORKS DEPARTMENT.

To A. H. LEE, Esq.

SIR,—I am directed by the Honorable the Governor in Council to acknowledge the receipt of your letter, dated 24th of last month, submitting with your observations on the subject, drawings and an estimate of a tramway adapted for a black soil country.

2. In conveying to you the thanks of Government for these valuable and useful papers, I am directed to acquaint you, that instructions have been issued, for the payment to you, by the Civil Architect, of the sum of Rs. 500, as remuneration for the trouble you have taken in their preparation.

3. I am to add, that Government intend publishing your letter and its accompaniments, for distribution to the officers of the Public Works Department.

I have the honour to be, &c.

(Signed) E. B. HOLLAND, Captain, R. E.,

Under-Secretary to Government.

*Bombay Castle, 18th December 1862.*

No 6412.

A copy of the above for the information and guidance of the Chief Engineer at the Presidency, and the Auditor of Public Works Accounts. The sum of Rs. 500 referred to in paragraph 2, is to be debited to the Reserve Fund.

*Bombay Castle, 18th December 1862.*

To Captain EDWARD HOLLAND,  
Under-Secretary to Government.

SIR,—I have the honour to acknowledge receipt of your letter of the 18th December, and to express my sense of the honour that has been conferred on me, by the approval and thanks of the Government. I shall be still more gratified if the papers should prove of any use to the officers of the Public Works Department, or others interested in tramways.

I take this opportunity of submitting a different arrangement of the sleeper framing for the bullock tramway, so as to make it also suitable for engine power. This arrangement will be much stronger and steadier, and will involve the use of rather more timber—

Per mile.

Say 590 cubic feet per mile at Rs. 1-4. .Rs. 747-8-0  
Bolts, 13 cwt. at 20 Rs.....260-0-0

Total additional cost. .... Rs 1,007-8-0

I have the honour to be, &c.

(Signed) ALEX. H. LEE.

*Oomrawultee, 29th December 1862.*

To Lieut. Colonel RIVERS,

Secretary to Government, Public Works Department.

SIR,—In compliance with the request of the Honorable the Governor in Council, as contained in your letter No. 5687, of the 17th October last, that I should prepare drawings, with a description and estimate of a tramway, such as I might consider to be the best suited for a black soil country, and for bullock power, together with an estimate and designs for rolling stock, sufficient for working 300 tons daily, over a length of 50 miles; I have the honour to submit the accompanying description, drawings, and estimate of a tramway, which will, in my opinion, best combine, under the above conditions, efficiency and economy in the working of such a traffic.

This tramway—see drawing No. 1—is designed to be constructed to the national gauge of 5 feet 6 inches, with rails of from 25 to 28 lbs. per lineal yard, resting on cross wooden sleepers.

The main advantages to be derived from this gauge, in preference to a smaller, are; *First*, that a less amount of rolling stock will be required in proportion to the tonnage conveyed; *Secondly*, that a pair of bullocks, working abreast, can conveniently pass between the rails; *Thirdly*, that occasionally, to obviate the inconvenience of unloading and reloading very heavy castings and packages, or articles of a similar character, when the tramway forms a branch to any railway, the heavy ten ton loaded waggons of the latter, can be brought on to the tramway\*; and *Fourthly*, that when it becomes desirable to convert the tramway into a railway worked by locomotive power, which would probably be the case after a number of years of working, the change could be effected at a minimum cost.

The pattern of rail which I prefer is that usually termed “temporary rail,”—see drawing No. 1—the upper table or rib being specially designed to resist the wear and tear of passing weights,

\* This could not be done without the adoption of every precaution to prevent accident, where any of the gradients may be steeper than 1 in 250, down which such a waggon will run unassisted with very considerable velocity.



and the lower table to give a true bed upon either horizontal or transverse sleepers.

The bridge form of rail of a light pattern, is occasionally employed in the construction of railways, but being more liable to split or spread, under heavy weights, it possesses, in my opinion, fewer advantages than the other.

The sleepers should not be less than 8 feet in length, and  $3\frac{1}{2}$  inches in depth, the middles being 7 inches, and the joints 10 inches in width, respectively. They should, as much as possible, be cut from teak, red babul, khair, and a few others of the most durable classes of timber. This is the more essential, as the frequent breaking up of the roadway on which the bullocks travel is most undesirable.

The rails are fastened to the middle sleepers by dog nails, one in each side of each rail, and to the joints by spikes—see drawing No. 1—passing through a  $\frac{3}{8}$  inch iron connecting or bed plate, 10 inches long by 5 inches wide, perforated, to correspond with the holes punched in the ends of each rail.

The ballast underneath the sleepers should be of course gritty moorum, or moorum stones, not above 3 inches in diameter, and be not less than 9 inches deep, where the road passes over black soil. The boxing or upper bed of ballast, should be of a finer class of material, and be free from clay or soily particles.

Only two classes of waggons will be necessary at first to work a general traffic, the one—see drawing No. 2—being specially designed for the conveyance of loosely packed docras of cotton, and the other for grain or other dead weight—see drawing No. 3. The former when well loaded, is capable of carrying  $1\frac{1}{4}$  to  $1\frac{1}{2}$  tons of cotton, or 3 tons of dead weight, and the latter, as much as 4 tons of dead weight.

The nave and spokes of the wheels are of cast iron, and the tires and axles of wrought. The latter revolve in brasses, fitted into pedestals of cast iron, which are bolted to framework of teak, or some superior class of jungle wood—see drawings Nos. 2 and 3.

To work a general traffic of 300 tons daily, over a distance of 50 miles, or say 225 tons in one direction, and 75 in the other, I estimate

that 350 of the larger, and 50 of the smaller class of waggon, will be required, and that 8 relays, of 150 pairs of bullocks each, will be necessary for the purposes of traction.

At each village on the route, and at other points, specially selected for their being conspicuous at long distances, loop sidings or crossing places, capable of containing, variously, from 30 to 50 waggons, will have to be provided.

The switches connecting the sidings with the main track, will consist of a moveable pair of rails, which, by the usual method, can be opened to the siding when required.

The crossings will consist of two rails, cut and forged to suit both lines, with wing rails to correspond.

The system of working the traffic on such a line of tramway as the above, will depend much upon local circumstances, but in order to prevent confusion, by waggons passing along in opposite directions, between the crossing places, it is essential that each set of waggons, with their respective bullocks, should be arranged into trains, starting and arriving at regular intervals throughout the day and night, and that each train should be under the control of a native guard, or overseer, who should be responsible for its keeping time, between the relays of fresh bullocks, or the various loop sidings.

The accompanying estimate of a mile of tramway—see appendix No. 4—cannot be depended upon as applicable to all black soil districts, inasmuch as every single item, would be increased or diminished by the route being removed nearer to, or further from, the sea, forests, or good ballast pits, or by a rise or fall in the iron market. It may be taken however, as a fair average for any line in the Bombay Presidency, within 20 miles of water carriage, or 100 miles in the direction of a railway from Bombay.

I have the honour to be, &c.

(Signed) CHARLES B. KER.

*Egutpoora, 10th January 1863.*

## APPENDIX No. 4.

*ESTIMATE of one mile of Tramway, 5½ feet gauge, inclusive of rolling stock, but exclusive of earthwork and masonry.*

		Rs. a.	Rs. a	Rs. a.
Rails .....	41 tons	135 0	5,910 0	
Joint Sleepers .....	330	3 4	1,072 8	
Middle do. ....	1156	1 8	1,734 0	
Joint connecting, or bed plates .....	16 cwt.	13 0	208 0	
Spikes and dog-nails .....	7 cwt.	14 0	98 0	
Ballast .....	2610 c. yds.	0 14	2,310 0	
Laying road, including the carriage of materials for an average distance of 25 miles. ....	1760 lineal yds.	1 2	1,980 0	13,342 8
Station and loop sidings, including the above items, say 140 lineal yds. per mile .....	140 lineal yds.	7 8	1,050 0	
Station, enclosures, offices, and sheds. ....	....	..	400 0	1,450 0
<i>Rolling Stock.</i>				
Waggons, Drawing No.2. ....	7	400 0	2,800 0	
Do. Do. No. 3 .....	1	370 0	370 0	3,170 0
				17,962 8
Contingencies, at 10 per cent. ....				1,796 8
Total Rupees, per mile .....				19,759 0

(Signed) CHARLES B. KER.

10th January 1863.

No. 196 of 1863.

PUBLIC WORKS DEPARTMENT.

To C. B. KER, Esq.

SIR,—I am directed by the Honorable the Governor in Council to acknowledge the receipt of your letter, dated 10th instant, submitting drawings, with a description and estimate, of a tramway adapted for a black soil country.

In conveying to you the thanks of Government for the valuable and useful papers, I am directed to acquaint you, that instructions have been issued, for the payment to you, by the Civil Architect, of the sum of Rs. 500, as remuneration for the trouble you have taken for their preparation.

I am to add that Government intend publishing your letter and its accompaniments in a volume of selections from Government records, with other papers on the same subject, for the information of officers of the Public Works Department.

I have the honour to be, &c.

(Signed) H. RIVERS, Lieut.-Colonel,  
Secretary to Government.

*Bombay Castle, 31st January 1863.*

No. 196.

A copy of the above for the information and guidance of the Chief Engineer at the Presidency, and the Auditor of Public Works Accounts, and the sum of Rs. 500, referred to in paragraph 2nd, is to be debited to the Reserve Fund.

*Bombay Castle, 31st January 1863.*

**BOMBAY :**

**PRINTED AT THE EDUCATION SOCIETY'S PRESS, BYCULLA.**

**SELECTIONS FROM THE RECORDS OF THE BOMBAY  
GOVERNMENT.**

**No. LXXII.—NEW SERIES.**

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**P A P E R S**

**RELATIVE TO THE INTRODUCTION**

**OF**

**REVISED RATES OF ASSESSMENT**

**INTO THE**

**DHOOOLIA & CHALISGAUM TALOOKAS**

**OF THE**

**KHANDEISH COLLECTORATE.**



**Bombay:**

**PRINTED FOR GOVERNMENT**

**AT THE EDUCATION SOCIETY'S PRESS, BYCULLA.**

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**1863.**



No 62 of 1863.

From Captain P. A. ELPHINSTONE,

Acting Supt. Rev. Survey and Assessment, Khandeish,

To L. R. ASHURNER, Esq.,

Collector of Khandeish.

SIR,—I have the honour to submit for the consideration of Government a report on the Dhoolia and Chalisgaum talookas, with reference to the rates I would propose for introduction into these districts during the current season.

2. These two talookas, which adjoin each other, as will be seen from the accompanying map, occupy the centre of the Khandeish collectorate. The northern portion of the Dhoolia talooka (the Petah Songier) had a revised assessment introduced last year, and will therefore be excluded from consideration in this report, except in so far as it may assist us in estimating the rates for other parts of the same talooka.

3. The position these two districts occupy with reference to the other districts of the collectorate is as follows:—

The *Dhoolia* talooka lies immediately to the south of the already settled districts, Virdel and Amulnair. The Burgaum talooka adjoins it on the east, Chalisgaum and Malligaum on its south, and the Pimpulnair talooka on the west.

The *Chalisgaum* talooka touches in the north the Dhoolia talooka, and is bounded by Burgaum and Malligaum on the east and west respectively, and on the south by the Nizam's territory.

4. Contiguous as these two talookas are to each other, the general features of the country present a striking difference. The Dhoolia talooka is composed of two distinct valleys, which are separated by a lofty but broken and irregular range of hills which enters



the district from the south-west and runs on in a north-easterly direction, dividing the district in two unequal parts. Numerous spurs springing from this range extend for some distance into both valleys, and as is usually the case in Khandeish, wherever this barren trap-rock comes into contact with the soil, impoverishes the surrounding country. The soil will consequently be found as a rule to be of an inferior description, although by no means unfertile, a few solitary patches of good black soil met with here and there forming the only exceptions. These valleys are drained by two rivers—the Panjra and the Borrec, only the first of which is of any importance, however, regarded in an irrigational point of view. The Borrec river contains very little water, even during the monsoon, and runs dry before the commencement of the hot weather. The Panjra river again is a perennial stream, and although no very large one, has at present several bandharras in tolerable working order, and which yield Government a remunerative return. Its capabilities are now being discussed by the Irrigational Committee, with the view to increasing its usefulness, and I shall therefore not enter here upon any further remarks on the subject.

5. It will be necessary, however, to revert to these rivers again when considering the grouping of the villages in classes, with reference to the rates to be placed upon them; for not only the climate but the fertility of the soil is likewise considerably influenced by the nature of the stream that drains the valley; and inversely the stream again is affected by the quality of the soil lying on both sides of its banks. It is a well-known fact that an ample and freely-flowing stream keeps up a healthy circulation of the air and tends to purify it, and all wells in its neighbourhood are generally speaking plentifully supplied with good water, a sub-stratum of water being also thereby retained at a certain distance from the surface of the soil, which must doubtless add considerably to the fertility of the latter. A *dry* stream on the contrary is in Khandeish a sure indication that the surrounding country is unfertile owing to the soil not being able to retain any moisture. No clay is found near the banks of such rivers, and the sub-soils are mostly of a porous earth, greatly intermixed with coarse gravel, through which the surface water percolates too quickly, or else of

pure sheet-rock. Such important indications should not be lost sight of, I think, in judging of the respective fertility of various parts of a district. This general rule will some times appear to be at fault where extensive tracts of sheet (trap) rock are found abutting on the banks of even the best supplied rivers; but this phenomenon is due to the capricious formation of the trap-rock, which forms the chief material of most of our hills, the spurs of which run far into the plains below until they are stopped as it were in their course by the river at the bottom of the valley.

6. The Chalisgaum talooka again has only one principal valley through which the Girna river makes its way from west to east, cutting off a small portion from the northern part of the district. Towards the south of the talooka a high wall-like range of hills rises almost suddenly from the valley. It enters the district from the west and runs straight across eastward into the Nizam's dominions. It is chiefly with reference to this range of hills that the general features of the country here differ so much from those of Dhoolia. In the latter district the hills are composed of a number of almost inaccessible and scarped peaks nearly devoid of all vegetation; whereas the range of hills lying in the southern part of Chalisgaum support on their summit an extensive table-land. This plateau, which is about 600 feet higher than the plain, extends almost the entire breadth of the district, from Koosoombtel to Kunnur and southward up to the frontiers of the Ahmednuggur zillah and the Nizam's country, where it joins the high lands rising from the Deccan plains. The soil here is apparently of a very fertile kind, being for the most part a rich black mould, which permits of rubbec crops being grown with much profit. In dry seasons, however, the crops yielded by this soil are often far from remunerative in consequence of this part of the country being so badly supplied with water. Nearly all the streams are dry during the greater part of the year; many of the wells contain but little water, and the soil itself has in consequence very little inherent moisture. It is owing to this scarcity of water that this tract of land is not so densely populated nor so well cultivated as might be expected. Most destructive hailstorms likewise periodically visit these heights and cause much devastation amongst

the crops, and occasionally it is said amongst the cattle as well (?). Only two years ago a terrific hailstorm laid low an entire tract of most luxuriant "rubbee," very little of which was able to recover itself again. When fixing rates for this part of Chalisgaum these circumstances will no doubt have to be considered in addition to any local peculiarities, favourable or otherwise, that may hereafter be found to exist with reference to the position this district occupies in the zillah.

7. Unlike Dhoolia, which I have described as containing a generally inferior soil, equally diffused all over the country, the lower plain of Chalisgaum (*i. e.* below the ghauts) begins on the west and south with a hard and stony soil, which, however, gradually improves in quality towards the Girna river and the north-east of the district, where it adjoins the Burgaum talooka. The low rocky elevations and masses of sheet-rock which constitute a great portion of the western and northern part of Chalisgaum closely hem in the course of the noble Girna for several miles after it has entered the district, especially in the left bank, and oblige it to swerve from its original direction, as will be seen from the map. From the village Mehoonbarree, however, the valley begins rapidly to widen, and the river pursues its course into the Burgaum talooka with fewer obstructions and through a more fertile land. This might be rendered much more profitable than it already is were irrigation applied to it. The Girna is, with the exception of the only Taptee, the finest river in Khandeish, and it is to be hoped that Captain Fife, our Irrigational Engineer, who is now engaged in examining it with the view of finding a suitable site for a bandharra, will soon be able to set on foot works which will bring into use its ample resources. There are several minor streams in both districts which might be profitably made use of for irrigationary purposes, and they will in due course be specially considered by the Irrigational Committee. All the villages bordering upon this river have not only the direct benefit of the constant and ample supply of pure water it affords them for domestic uses as well as for their cattle, but they also enjoy the indirect advantage of the influence so plentiful a stream exerts on the neighbouring land and its wells.

8. With respect to climate Chalisgaum appears to be decidedly more healthy than Dhoolia, fever being more prevalent in the latter than in the former district. This may be owing to the Dhoolia valley being so much confined within the numerous straggling spurs that overrun the country, as well as to its more *western* position in the zillah; perhaps also to the greater extent of patusthul garden land in Dhoolia, as irrigation appears to be a prolific source of fever in Khandeish. Both in Dhoolia and Chalisgaum the western villages suffer most from fever, and in the latter district the villages lying along the foot of the Santmalla range are likewise considered somewhat unhealthy in consequence of the jungle being so dense.

9. The mode of husbandry practised is exactly the same in both Dhoolia and Chalisgaum; and as these districts do not differ in this respect from those already reported upon, I shall not waste any time in simple recapitulation. I would observe, however, that the cultivation of dry land is not carried on as carefully as it might be, apparently from the excessive idleness and love of ease natural to the native of India, who is not easily roused from his lethargy without some great inducement. It is not an unusual sight to see a field carelessly ploughed; no manure applied for years, perhaps, although there may be plenty lying at the very doors of the cultivator's fields in which the crops are nearly choked with weeds, which are allowed to run to seed unchecked, and thereby increase from year to year. I have no doubt, however, that in a few years' time, if the demand for cotton and oil seeds continues to be as great as it is now, self-interest will completely cure even the most inveterate idler of his hereditary inertness.

10. The crops grown are the same as in other parts of Khandeish. "Rubbee" crops, such as wheat, gram, &c., are not often met with, except in irrigated lands, owing to the soil being so inferior in both districts. On the table land in the Chalisgaum talooka however, as observed in a former paragraph, these crops grow very luxuriantly in favourable seasons. The sudden and excessive rise in the price of cotton has given a great stimulus to the cultivation of this crop; but as yet the ryots do not appear to have profited much by this change, the native merchants, who on such occasions generally speaking col-

lect the interest due to them in *kind*, being the only parties who really are the gainers. The staple food of the cultivators is the bajree, which thrives well even in the poorest soils. In the Chalisgaum talooka the Bheels, who inhabit the villages lying along the face of the Santmalla range, derive much profit from gathering the flower of the "mahoo" or mhowra tree, which yields by distillation an inferior kind of alcohol, and is largely consumed in this state by the lower classes of the people. The jungles also abound with a tree or rather shrub called the charollée, the fruit of which is like a small cherry, having a stone and kernel very similar to that fruit; this kernel is in taste very like a sweet almond, and is much sought after by the wealthier natives of Bombay and other large towns. Another production of the Chalisgaum jungles, but especially of the hills, is the "dhamra" tree. It yields a gum far superior to the common gum arabic in whiteness and tenacity, and would therefore be well worth being *preserved* by Government. The tree grows to the height of about fifteen feet, has a white and fine-grained wood almost as hard as boxwood, and might be used for like purposes but for the stem not attaining in these hills any great girth. I have never seen one of these trees stouter than five or six inches in diameter.

11. Both in Dhoolia and Chalisgaum the population must be considered chiefly agricultural, no manufactures of any importance being carried on in either of the districts, and the people are evidently in a thriving condition, although the population is scanty. This appears to be especially the case with the population of the Dhoolia talooka. The populous and rich town of Dhoolia being the centre of all the traffic from the surrounding districts has caused much wealth to be disseminated in many portions of the talooka, and we find therefore a great number of very substantial farmers all over the district. The cultivators of the Chalisgaum talooka, especially those in the western parts of the district, struck me two years ago as being in less easy circumstances than those of Dhoolia. But the Railway, which is now completed and passes through the district, appears already to have made a considerable improvement in the condition of some of the people, particularly of the poorer classes, who have found in large numbers very profitable employment in the

works of the line. The population of both districts, however, is still very scanty—considerably less dense than of any of the districts hitherto settled by us. Of the two, Dhoolia is the best populated district, having 102 souls per square mile when calculated on the extent of its arable land, whereas Chalisgaum has only 77 souls to the square mile. This estimate, however, hardly gives a correct idea of the agricultural population or even the general denseness of the inhabitants as it includes the large towns of Dhoolia and Chalisgaum, the former of which alone has upwards of 10,000 inhabitants and the latter 2,800. Excluding these towns, the population of these two districts is almost equal, Dhoolia having 78 souls and Chalisgaum 73 souls to the square mile of the arable land.

12. In the course of a few years Chalisgaum will, owing to the establishment of the Railway, grow considerably in importance and bear the palm off Dhoolia, which, being out of reach of the Railway, will soon fall into insignificance, unless a branch line of rail be laid down to connect it with Julgaum and Chalisgaum. Such a scheme would not prove an unprofitable one I imagine, as the traffic along the Dhoolia road is very great, and would not be interrupted even if the whole line to Nagpoor were completed. This measure would also obviate the necessity of keeping up the high road from Dhoolia to Bombay, which I do not think could otherwise be dispensed with for years to come. While on this subject I would draw prominent attention to a fact connected with the line of rail that has been completed (?) from Bombay as far as Chalisgaum and Julgaum. In order that such a work be of real utility in a country like India, where ordinary means of conveyance can at times not be procured at any price, there should be no interruption on the line ; at least not of such a nature as to oblige the goods being conveyed by other means than those at the command of the Railway authorities. Until such is secured the Railway will never become popular, and much of the traffic, as is still the case, will follow its former channel. Another important requirement appears to me to be the existence of some rule which would make the Railway Companies answerable for damage done to goods carried by them.

Such numerous and continual complaints are being made of dishonest practices taking place on even the short Railway from Bombay to Chalisgaum, such as the opening of boxes and abstraction of cotton, sugar, bottles, &c., while the time of transit is occasionally about *twice* as long as could be performed by an ordinary cart drawn along a country road by bullocks, that some decided improvement is urgently called for if the Railway is ever to become such a boon to the people in this country as it has proved in other countries.

13. There are two excellent high-roads in the Dhoolia talooka. The principal one is the Bombay and Agra road, which passes through the centre of the district and likewise through the town of Dhoolia itself; it is metalled and bridged in its entire length through the district, the bridge over the Panjra river near Dhoolia being a very extensive work and one which does much credit to its architect (Colonel Bell of the Bombay Engineers), from its combined strength and elegant appearance. The other high-road branches off from the above at Jhorega and runs upwards in a north-easterly direction through Borecoond to Asseerghur. This road is also metalled, but only partially bridged. Several other minor high-roads converge here from the surrounding districts to Dhoolia as the centre of all the traffic that enters Khandeish, and this town has therefore become of considerable commercial importance. A new and direct road has been projected between Chalisgaum and Dhoolia; it was commenced last year I believe, but the work was interrupted for some time, and I am not aware whether it is to be completed or not.

14. In Chalisgaum there is only one high-road deserving the name; it leads from Nandgaum in the Malligaum talooka to Chalisgaum *via* Nyahadongree and Tullegaum. This road is unmetalled however, although this is of little consequence at present, as the Railway which has taken the same direction has in a great measure destroyed its value as a trunk road. A small road leading down the table-land into the valley below deserves notice. It joins Jategaum, which is on the top of the ghaut, with Purdharree at its foot. The ghaut is called after the latter village the Purdharree ghaut. Much money has occasionally been spent, I believe, in

trying to improve and repair this ghaut, which is a very steep one; but it was originally laid out so badly that any permanent improvement is out of the question. As an easy communication between this plateau and the Railway below is of some importance to the villages concerned, I would strongly recommend that some better road be lined out which will enable laden carts to go up and down with safety, which is hardly possible just now. There is an old road on the western side of the range which might, perhaps, be improved sufficiently to answer the purpose, and it would be worth while to have it examined by the proper authorities. It leads from Jategaum to Kussara in the Nuggur zillah, and is called the Kussara ghaut.

15. I omitted in a previous paragraph to draw attention to the isolated positions occupied by several of the villages on this plateau. It will be seen from the map how scattered they lie, and I cannot help thinking that, politically or otherwise, the fact of these villages being so completely interlaced and surrounded by those of a foreign power like the Nizam's government can hardly be desirable. If an arrangement could be entered into with the latter government for exchanging villages with us, or the Nizam's villages lying interspersed amongst ours being made over to us in order to form an uninterrupted boundary line between the two countries, it would be an advantage to both governments, and tend to the improvement of the revenue now obtained from those villages.

16. Having now given a short description of both talookas, I shall proceed to consider each separately with reference to the rates that appear to me most suitable to its circumstances, and I shall begin with the Dhoolia talooka as it adjoins those already brought under our revised rates.

17. The measurement of the Dhoolia talooka was commenced in 1856 under the late Mr. Davison and completed last year by Mr. Whitcombe. The classification of soils commenced under Mr. Scott in 1860 and is still in progress under Mr. Whitcombe, but will be completed early this season. The subjoined test returns show the nature and result of the tests hitherto applied to both operations during the progress of the work :—



Government Villages.			Nature, Extent, and Result of Test.																
Nature of Operation.			Total No. of Villages tested.	By European Officers.					By Natives.					Total Test. :					
				Fields.	Acres.	Average error.		Fields.	Acres.	Average error.		Fields.	Acres.	Average error.					
No.	Fields.	Arable Acres.				Per Cent.	Field.				Per Cent.	Field.			Per Cent.	Field.			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17			
{ Measurement .. Classification. ... }			152 135	152 135	2,165	26,138	0	30	..	14	120	1	4	..	2,179	26,258	0	30	..
					1,426	17,066	..	4½	..	..	..	..	..	1,426	17,066	..	4½		

18. The errors discovered by our testing officers are, as will be seen from the foregoing table, columns 16 and 17, on an average very small, which would indicate that both operations were carried on with considerable care. These have already been fully brought to your notice in the yearly progress reports, and will therefore not require further remarks in this report.

19. The Dhoolia talooka is composed altogether of 227 villages. Of these 69 belong to the Songier petah, into which revised rates were introduced last year, and the remaining 158 to the soobha of Dhoolia itself which forms the subject of this report. *Five* of these villages belonged formerly to the Amulnair talooka, and were settled when revised rates were introduced into that district. *One* (Ranmulla) is an alienated village which is not to be assessed by us, the jhageerdars refusing to have it measured. There remain therefore only 152 villages for which a revised assessment will be proposed, and the following remarks apply solely to these villages.

20. Before speaking of the rates I have prepared for Dhoolia, I will consider the progress made by this district since the year of our accession as far as I have been able to gather from the revenue records, of which the annexed diagram is a correct exposition. Facts connected with the management of this district *previous* to our rule I am unable to furnish as I have in vain attempted to collect data bearing upon the past history of Khandeish, and which would throw more light than we already have on the probable causes which have reduced this province from the prosperous condition in which there is every evidence that it was in former years to its present comparative state of poverty, large towns having sunk into insignificance and even disappeared altogether, extensive tracts of country, which according to tradition and still-existing traces must have been richly cultivated at one time, being now but a wilderness covered with a dense jungle, and trodden only by the wild Bheel hunter or perhaps by a stray wood-cutter. I have not succeeded in obtaining a single document relating to the Marathi or Mahomedan period, and from all accounts all such papers were either lost or destroyed during the

unhappy reign of the Peishwas, when the whole of Khandeish was more or less at the mercy of hordes of lawless marauders, who spared neither life nor property in the attainment of their own selfish ends, which they covered in many cases with the cloak of authority and justice.

21. The system of assessment prevailing in other parts of Khandeish previous to our rule likewise obtained here and has already been fully described in former reports. During the Mahomedan rule it was the "tankhwa" and "rakba," which was in fact our present bighotee system; but in the Peishwas' time the revenue was collected in a very arbitrary way. Land was rented nominally by the "ookta" and "out-bandee" tenures, but the heads of "mahals" or pergunnas to whom the revenue was farmed out had full authority to squeeze the ryots if required; and although this system had the advantage of saving Government the expense of keeping up large establishments for the collection of the revenue and also of ensuring to Government regular returns, it tended to impoverish the country rapidly, and was the cause of the most cruel oppression. This system of farming the revenue is still practised in many of the native states I believe, and while it continues anarchy in its worst form will also continue to exist. On our obtaining the country in 1818-19 the bighotee system was reintroduced, and the land under cultivation was yearly measured. This system after undergoing several modifications is the one still in existence.

22. From the diagram annexed one can see at a glance the progress which the Dhoolia district has made during our rule. The ~~yellow~~ <sup>thin</sup> zigzag line which represents the cultivation rises almost without interruption and with considerable rapidity from the small area of 16,002 acres in 1818-19 to 67,619 acres in 1861-62, having thus increased more than fourfold during the last forty-four years. None of the districts hitherto settled have made such a steady progress, and Virdul is the only talooka that at all approaches Dhoolia in the increase that has taken place in the area of land under cultivation.

23. Following the course of the strong black line in the diagram, it will be seen that notwithstanding the high rates which existed on our obtaining the country an attempt was made the very next year to *raise* the assessment. This, however, was evidently found to be unsuitable, and the rates were repeatedly lowered up to the year 1847-48, from which time they have continued the same. The only change that was made during this period was the fixing of a lighter assessment (eight annas per acre) on lands that had lain waste for years. This was done in the year 1852-53, and gave a great impulse to the cultivation, which is seen to rise more rapidly from that year. Heavy remissions amounting to from one-third to one-half of the entire revenue had to be granted to the ryots in the years 1824-25, 1832-33, and 1838-39 in consequence of severe droughts. A great deal of fluctuation is apparent in the revenue for the first twenty or thirty years; this is evidently owing to the difficulty that was experienced at first in fixing upon a suitable rate of assessment, and after such was attained the revenue is seen to follow the course of the cultivation more closely.

24. That notwithstanding the check given to the increase of the cultivation by the frequent droughts above alluded to, so great an extension should have taken place of the land under cultivation in so comparatively short a time and with so scanty a population is an evident sign of the growing prosperity and the ready resources of the agricultural population. I would therefore not advocate the present rates being lowered more than is necessary to equalise the at present arbitrary assessment.

25. In paragraph 19, I mentioned that 150 villages would be brought under the revised rates, but as, owing to the thinness of the population, sufficient assistance was not obtainable to allow of more than a limited number of classes being employed at the same time, 30 villages had to remain over for completion this year. The classification of these has been almost finished, but as the necessary documents will take some time being prepared, I shall not detain this report on their account. These villages can hereafter

easily be placed in whichever of the classes may suit their circumstances.

26. In the following table will be found the several villages from which I have for the present excluded the 30 unfinished ones, arranged in three classes, which appears to me to be a sufficient minute division for this district :—

Group of Villages.	No. of Villages.	Conditions affecting the grouping of Villages.	Maximum Dry Crop Rates.
			Rs. a.
I.	24	Villages possessing the advantage of being market towns or lying within their immediate vicinity, or along the banks of the Panjra river and having the best climate . . . . .	2 6
II.	69	Villages similarly situated with respect to markets, but having an inferior climate or being less favoured in other respects; also villages lying along the principal high-roads but at some distance from markets and the market towns on the Borree river.	2 2
III.	29	Villages more unfavourably situated than the last or lying in the Borree valley and those among the rocky ranges dividing the two valleys . . . . .	1 14

27. In explanation of the foregoing table of rates it will only be necessary to observe that in dividing the villages of this talooka in groups I have been guided to a great extent by the natural divisions of the country, described in a previous paragraph. I have accordingly placed most of the villages lying in the more favoured valley of the Panjra river in the I. and II. classes, and those of the Borree valley in the II. and III. classes. After consulting the Revenue Commissioner and yourself on the subject, I have now placed a greater number of villages in the higher classes than I at first intended.

28. With respect to the rates I have proposed, the 1. and II. classes are two annas per acre higher than the corresponding classes of the Songier petah introduced last year. The III. class has the same maximum rate as the 2nd sub-division of the II. class in Songier, and is four annas per acre higher than the III. class of that district. This increase on the Songier rates appears to me called for by the different circumstances of the Dhoolia district. Not only have the villages of the latter soobha the advantage of the largest and best bazar of the whole collectorate, but the general prosperity of Dhoolia is likewise considerably greater than that of Songier. In the latter the cultivation has risen during the last forty-four years from 11,649 to 36,631 acres, whereas in Dhoolia the rise during the same period has been from 16,002 to 67,619 acres, notwithstanding the greater thinness of its population.

29. For the patusthul garden-land, which forms a comparatively large portion of the land under cultivation, I am unable to propose rates until some measures have been adopted regarding the assessment of such lands. My views on the subject I have already laid before Government. The land under irrigation last year amounted to 1,700 acres, and brought in a revenue of Rs. 16,439.

30. The land assessable as motusthul garden land is 2,011 acres in extent, and irrigated by 496 wells. Besides these there are 192 wells, which though in good order are not assessed by us, not having been in use upwards of fifteen years. For this description of irrigated land I would recommend the rate sanctioned for Songier (viz. Rs. 3 per acre as a maximum rate) being adopted for the entire district, as it is sufficiently low to suit the circumstances of the poorest garden cultivator.

Excluding that of 23 villages of which the examination of wells has not yet been completed.

31. I beg to subjoin the following abstract drawn up from Table A at the end of the report to show the financial result the proposed rates will effect. They have been applied to the cultivation of last year, 1861-62 :—

Class.	Maximum Rate.	Villages.	According to the Old Rates of Assessment						According to the proposed Survey Rates.				
			Average of past Collections by Cultivated Land for 44 years.			Land under Cultivation in 1861-62.			Roughly Estimated results in the Cultivation of the year 1861-62.		Government Arable Land		
			Acres.	Collec- tions in Rupees	Acres.	Asses- ment in Rupees	Rate per Acre.	Collec- tion in Rupees.	Survey Assess- ment.	Rate per Acre	Acres.	Survey Kumal	Rate per Acre.
I	2	3	4	5	6	7	8	9	10	11	12	13	14
	Rs. a. p.						Rs. a. p			Rs. a. p.			Rs. a. p.
I.	2 6 0	24	11,537	17,530	19,711	25,225	1 4 6	24,964	25,815	1 4 11	45,997	43,484	0 15 2
II.	2 2 0	69	17,370	19,440	31,185	31,399	1 0 1	30,888	29,274	0 15 0	1,11,028	74,339	0 10 9
III.	1 14 0	29	4,952	4,379	8,558	7,017	0 13 1	6,901	5,641	0 10 7	31,967	18,200	0 9 1
Total..		122	33,859	41,319	59,454	63,641	1 1 2	62,753	60,730	1 0 4	188,992	136,023	0 11 6

32. The increase perceptible in the assessment of the villages of the I. class is owing to these villages having originally been assessed much lower than other villages possessing similar soils; they can therefore have no cause to be dissatisfied with an equalisation of their assessment being now made, and which places them on an equal footing with those villages that have hitherto paid a heavier assessment than themselves. The entire reduction brought about by the proposed assessment is Rs. 2,023, or  $3\frac{1}{4}$  per cent. on the present rates, and as the average of the remissions given during the past forty-four years is only Rs. 2,442, and the remissions granted during the last ten years are but Rs. 1,492 on the average (referring to the 122 villages under report), the new assessment may, I think, be considered sufficiently liberal for a district as prosperous as Dhoolia.

33. In concluding my remarks on the Dhoolia talooka I would mention that the village jandi, which formerly formed part of Dhoolia, but was transferred last year to Amulnair, will have to be settled during the current season. It lies in the 2nd sub-division of the II. group of the Amulnair villages, and as from the following abstract the rate adopted for that group appears to be suitable for this village, I would solicit the sanction of Government for its settlement :—

Class.	Maximum Rate.	Villages.	According to the Old Rates of Assessment.						According to the proposed Survey Rates.					
			Average of past Collections on Cultivated Land for 44 years.			Land under Cultivation in 1801-02.			Roughly estimated results on the Cultivation of the year 1861-62.		Government Arable Land.			
			Acres.	Collection in Rupees.	Acres.	Assessment in Rupees.	Rate per Acre.	Collection in Rupees.	Survey Assessment	Rate per Acre.	Acres.	Survey Kunal	Rate per Acre.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
II. 2nd Sub-Division	Rs. a.						Rs. a. p.			Rs. a. p.			Rs. a. p.	
	1 8	1	111	64	54	37	0 11 0	37	22	0 6 3	351	142	0 6 6	

34. We have now to consider the settlement to be made for the Chalisgaum talooka. The measurements of this district were commenced in 1856-57 by Messrs. Assistant Baker and Sub-Assistant



Whitcombe, and completed in 1861-62 by Mr. Assistant Pitt. The classification of soils was begun in 1860-61 under my supervision, and finished, with the exception of a few villages, last year (1861-62) under Messrs. Assistant Scott and Cumming and Sub-Assistant Whitcombe, who alternately superintended the work. The subjoined table shows the result of both operations, which I hope will not be considered unsatisfactory :—

Government Villages.			Nature, Extent, and Result of Test.													
Nos.	Fields.	Arable Acres.	Nature of Operation.	Total No. of Villages tested.	By European Officers.				By Natives.				Total Test.			
					Fields.	Acres.	Average Error.	Per Cent. Field.	Fields.	Acres.	Average Error.	Per Cent. Field.	Fields.	Acres.	Average Error.	Per Cent. Field.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
			Measure-ment..					gs. pies.				gs. pies.				pies.
142	14,218	299,678		142	1,082	17,644	29	..	48	609	32	..	1,130	18,253	29	..
			Classifica-tion ..	130	863	16,783	..	4	1	9	..	1	864	16,792	..	4

It will be perceived that a few villages still remain untested, but these will undergo the usual operations before the introduction of the revised settlement into the district, which will enable them to be included in the settlement this year.

35. Chalisgaum underwent last year similar to the other districts of this zillah a considerable change in the demarcation of its boundary, and it now consists altogether of 166 villages, and has, with the exception of its southern boundary, where it borders upon and is intermixed with the Nizam's villages, a more compact and regular form than it had before. Of these villages 25 are alienated or partially so, which leaves 141 Government villages; but as one of the alienated villages is by the desire of the jhageerdar to be assessed by us, revised rates will have to be introduced this season into 142 villages. As the classification of 11 of these villages is not quite completed yet, I am unable to include them in my proposals at present, but as in the case of the unfinished villages of the Dhoolia talooka, they will be assessed according to the rates placed upon the classes to which they belong.

36. Most of the villages now forming this district belonged originally to the Soobha of Dowlutabad, in the Nizam's dominions. After the battle at Kurda in the Deccan (A. D. 1795) the Peishwa obtained possession of and retained them until 1818. The short though inglorious reign of the Maratha rulers had the same and even worse results in this talooka than in the districts already reported upon, and we consequently find the population even more sparse here than in Dhoolia. Although there is no documentary evidence on the subject, tradition places it beyond doubt that these districts were far happier even under the arbitrary and barbarous reign of the Moghuls (whom the natives up to the present day look upon as model rulers) than under that of the cruel and grasping Marathas, who reduced the entire country to such extremities as to bring about a terrible and general famine (A. D. 1807) by their cruelties. Self-interest, however, seems in the end to have taught even these lawless rulers the necessity of and advantages to be gained by a more

equitable treatment of their subjects, as after the great famine the people appear to have been left undisturbed till our accession in 1818. Although more than half a century has elapsed since the occurrence of that fearful calamity, and the continued peace and security enjoyed by the people during our reign has considerably augmented the population, and greatly restored the almost exhausted resources of the country, the *bulk* of the population must still be considered poor.

37. On our obtaining possession of this district, the assessment, as will be seen in examining the accompanying diagram, was by no means very high, being on the average only Rs. 2-2 per acre, whereas in Dhoolia it was Rs. 3-1 per acre. It must be taken into consideration, however, that these rates include the *patusthul* assessment as well, which was so exorbitantly heavy in former years and which in consequence of the garden cultivation in Dhoolia covering so much greater an extent of land than in Chalisgaum would necessarily somewhat increase the average rate per acre on the entire district, and thus make it appear still higher than it was in reality. It is evident from the assessment (the dotted black line) and cultivation (the yellow line) lines running nearly parallel for the first fifteen years and the cultivation increasing almost uninterruptedly that the rates then imposed could not have been much too heavy; but the too severe droughts which occurred within that period seem to have exhausted the cultivator's means sufficiently to cause a perceptible falling off in the cultivation in the year 1834-35. From this year great reductions were made in the existing rates to such an extent that in three years the revenue fell to nearly one-half of what it was before, or rather what it would have been had the rates not been reduced from upwards of two rupees to nearly one rupee per acre. These reductions however, liberal as they were, do not appear to have satisfied the revenue officers, who found it advisable still further to reduce the assessment of many of the villages, and up to the present time the average rate per acre has been much less than one rupee.

38. The steady and rapid increase of the cultivation, especially

within the last ten years, is an unmistakeable sign of the prosperous condition of this district, and as the existence of the railway will tend considerably to open out the resources of the country and give increased facilities for the disposal of agricultural produce, any reduction in the present assessment would appear to be unnecessary. The rates here proposed are those determined upon in consultation with Mr. Ellis and yourself. The slight increase of these rates over those proposed for Dhoolia has been considered advisable in consequence of the greater advantages possessed by Chalisgaum in having the railway station in its centre, and most of the villages having easy access to it.

39. I have excluded from the subjoined table of groups the 11 villages mentioned in paragraph 35 as not having been quite completed. The rates proposed apply therefore for the present to 130 villages :—

Group of Villages.	No. of Villages.	Conditions affecting the grouping of Villages.	Maximum Dry Crop Rates.
			Rs. a. p.
I.	25	Villages most advantageously situated with regard to markets, the market towns themselves and a few villages in the more fertile portion of the Girna valley and having the best climate .....	2 8 0
II.	44	Less favourably situated than the last, but lying along the banks of the Girna or the high-road to Chalisgaum and the smaller bazar towns .....	2 4 0
III.	31	Villages less advantageously situated than those of the II. group both with respect to markets and climate.	2 0 0
IV. {	26	The villages on the table-land having a scarcity of water, and being very inconveniently situated with regard to the Railway as well as markets, although possessing an excellent climate and good soil .....	1 12 0
	4	Villages lying amongst the Santinullec hills and being entirely deserted or nearly so, and exposed to the ravages of wild animals and having the worst climate .....	1 10 0

I have added a sub-division to the fourth class in this district for the benefit of a few villages which lie far in the heart of the Sautmullee range, and are still deserted and infested with wild animals.

40. There is no patusthul land in Chalisgaum except at the village Patoonda, and that only to the extent of 89 acres; but the assessment of this land will for the present have to remain with that of Dhoolia on its present footing, pending a mode of assessment that may be decided upon. For the well-lands of this district I propose adopting the same rate as I recommended for Dhoolia, viz. Rs. 3 per acre as a maximum rate. The land coming under this head is 2,009 acres in extent,\* and the wells capable of being used and coming under our assessment are 500 in number.

41. The effect produced by the proposed rates will be seen from the following table.

\* Not including the garden-land and wells belonging to 11 villages which have not been examined as yet.

[Table

Class.	Maximum Rate.	According to the Old Rates of Assessment.										According to the proposed Survey Rates.			
		Average of past Collections on Cultivated Land for 44 years.					Land under Cultivation in 1861-62.					Roughly estimated results on the Cultivation of the year 1861-62.			
		Acres.	Collection in Rupees.	Acres.	Assessment in Rupees.	Rate per Acre.	Rs. a. p.	Rs. a. p.	Acres.	Assessment in Rupees.	Rate per Acre.	Survey Assessment.	Rate per Acre.	Acres.	Survey Kumal.
I.	2	4	5	6	7	8	9	10	11	12	13	14	Rs. a. p.	Rs. a. p.	Rs. a. p.
I.	2 8 0	25	10,809	13,901	17,835	20,095	1 2 0	19,932	22,600	44,688	45,495	1 0 3	45,495	1 0 3	45,495
II.	2 6 0	44	11,840	12,251	23,689	21,372	0 14 5	20,868	22,417	78,109	61,117	0 12 6	61,117	0 12 6	61,117
III.	2 0 0	31	6,266	5,113	12,583	9,969	0 12 8	9,783	9,028	49,504	30,408	0 9 10	30,408	0 9 10	30,408
IV.	1 12 0	26	5,966	6,284	8,290	8,524	1 0 5	8,418	7,141	35,067	23,919	0 10 11	23,919	0 10 11	23,919
	1 10 0	4	411	182	555	299	0 8 7	286	304	8,521	3,360	0 6 4	3,360	0 6 4	3,360
Total..		130	35,292	37,731	62,952	60,259	0 15 4	59,287	61,490	215,889	164,299	0 12 2	164,299	0 12 2	164,299

42. On referring to Table E several of the villages will be found considerably higher assessed than before. This is the consequence of the very arbitrary manner in which this district was originally assessed, the best lands bearing almost the same rates as the inferior ones, and wealthy and influential villages being assessed at lower rates than the poorer neighbouring villages, which, although having in some instances much less valuable soils, had evidently been unable to exert the same influence over the land-assessors as their richer neighbours. The villages in which the assessment will be thus raised by the proposed rates are with very few exceptions the wealthiest of the district, and there seems no season therefore why they should not now be brought to the same level with those villages, which have hitherto had to bear a proportionably much higher assessment. The general effect produced by these rates over the whole district is an increase of Rs. 2,203 on the present assessment or 3½ per cent. This increase is, perhaps, somewhat high, but as the Revenue Commissioner and yourself are of opinion that in consideration of the remissions being very slight (Rs. 1,967 only on the average during the last forty-four years, and Rs. 1,077, during the last ten years) and of this district rapidly increasing in prosperity, it is well able to bear this enhanced assessment, I have prepared the rates accordingly.

I have the honour to be, &c.

P. A. ELPHINSTONE, Captain,  
Actg. Supt. Khandeish Revenue Survey.

*Superintendent's Office, Camp Malligaum,  
7th February 1863.*

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## TABLE A.

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LIST OF GOVERNMENT VILLAGES, &c.  
f

TABLE

*List of Government Villages referred*

Class.	Number of Villages.	Names of Villages	According to the Old Rates			
			Average of past Collections on Cultivated Land for 11 years.		Land under Cultiva	
			Acre.	Collection in Rupees.	Acre.	Assessment in Rupees.
1	2	3	4	5	6	7
Class I.—Maximum rate Rs. 2-6-0-	1	Arnee .....	261	376	767	981
	2	Nimkheira.....	202	766	386	1,241
	3	Koondana Warkheira .....	287	199	405	286
	4	Warkheira .....	869	1,222	1,332	1,596
	5	Balapoorree .....	496	644	928	1,055
	6	Phangne .....	784	1,145	1,273	1,507
	7	Dhoolia .....	1,583	2,679	3,155	5,006
	8	Dewpoor .....	267	128	385	172
	9	Wulwarree .....	601	564	823	747
	10	Nukan .....	334	454	456	544
	11	Muhindla .....	238	344	354	420
	12	Sittore .....	51	29	62	40
	13	Moirana (Pr. Lullniz) .....	199	181	284	270
	14	War .....	595	1,662	1,035	2,985
	15	Koondana War .....	275	198	597	457

**A.***to in Paragraph 26 of Report.*

of Assessment.		According to the proposed Survey Rates.					
tion in 1861-62.		Roughly estimated result on the Cultivation of the year 1861-62.		Government Arable Land.			
Rate per Acre.	Collection in Rupees	Survey Assessment.	Rate per Acre.	Acres.	Survey Kunal.	Rate per Acre.	Nominal average value of Soil
8	9	10	11	12	13	14	15
Rs. a. p.			Rs. a. p.			Rs. a. p.	Rs. a. p.
1 4 6	970	912	1 3 8	2,092	2,273	1 1 5	0 8 3
3 3 5	1,241	1,229	3 2 11	631	1,503	2 6 1	0 8 1
0 11 4	276	331	0 13 1	1,156	741	0 10 3	0 5 6
1 3 2	1,581	1,626	1 3 6	1,705	2,000	1 2 9	0 8 2
1 2 3	1,044	1,035	1 1 10	1,420	1,491	1 0 10	0 7 6
1 2 11	1,488	1,266	0 15 11	2,746	2,197	0 12 10	0 6 5
1 9 7	4,954	5,521	1 12 0	4,413	6,556	1 7 9	0 7 7
0 7 2	171	275	0 11 5	1,422	774	0 8 9	0 4 8
0 14 6	747	1,087	1 5 2	1,630	1,734	1 1 0	0 8 11
1 3 1	516	535	1 2 9	939	900	0 15 4	0 7 11
1 3 0	400	376	1 1 0	1,012	869	0 13 9	0 7 2
0 10 4	40	42	0 10 10	623	311	0 8 0	0 4 6
0 15 3	268	239	0 13 6	1,182	1,000	0 13 6	0 5 8
2 14 2	2,982	3,342	3 3 8	2,225	4,098	1 13 6	0 4 11
0 12 3	451	458	0 12 3	1,877	1,278	0 10 11	0 5 2

Class.	Number of Villages.	Names of Villages.	According to the Old Rates			
			Average of past Collections on Cultivated Land for 44 years.		Land under Cultiva	
			Acres.	Collection in Rupees.	Acres.	Assessment in Rupees.
1	2	3	4	5	6	7
CLASS I.—Maximum rate Rs. 2-6-0.	16	Kunnair.....	144	95	369	244
	17	Kheir.....	996	2,276	1,412	1,652
	18	Sowdana .....	309	453	474	601
	19	Wurjai .....	444	862	635	883
	20	Borekoond .....	864	1,028	1,584	1,324
	21	Pimpree .....	282	188	488	308
	22	Moharee .....	337	269	540	388
	23	Kalkheira .....	320	392	539	600
	24	Mooktee .....	799	1,376	1,428	1,918
	24	Villages.....	11,537	17,530	19,711	25,225
CLASS II.—Maximum rate Rs. 2-2-0.	1	Awdhan .....	202	119	458	199
	2	Sawulda .....	226	146	403	252
	3	Ravere .....	93	77	238	209
	4	Dhoree .....	85	70	43	43
	5	Dhumane .....	37	41	58	73
	6	Nagaum—Boodrook .....	499	506	568	620
	7	Bhiladee .....	475	462	705	606

of Assessment.		According to the proposed Survey Rates.					
tion in 1861-62.		Roughly estimated result on the Cultivation of the year 1861-62.		Government Arable Land.			
Rate per Acre.	Collection in Rupees.	Survey Assessment.	Rate per Acre.	Acres.	Survey Kumal.	Rate per Acre.	Nominal average value of Soil
8	9	10	11	12	13	14	15
Rs. a. p.			Rs. a. p.			Rs. a. p.	Rs. a. p.
0 10 7	233	238	0 10 4	1,226	667	0 8 8	0 4 4
1 2 9	1,641	1,960	1 6 3	5,775	4,855	0 13 5	0 5 9
1 4 3	600	395	0 13 4	1,755	1,178	0 10 9	0 5 5
1 6 0	882	730	1 2 5	797	853	1 1 2	0 7 5
0 13 4	1,291	1,171	0 11 10	5,336	3,144	0 9 5	0 4 10
0 10 1	299	488	1 0 0	717	663	0 14 10	0 6 9
0 11 6	380	548	1 0 3	835	796	0 15 3	0 6 10
1 1 10	591	443	0 13 2	1,582	1,095	0 11 1	0 5 2
1 5 6	1,918	1,538	1 1 3	2,901	2,508	0 13 10	0 6 10
1 4 6	24,964	25,815	1 4 11	45,997	43,484	0 15 2	....
0 6 11	193	436	0 15 3	1,209	1,054	0 13 11	0 7 2
0 10 0	247	289	0 11 6	1,014	610	0 9 8	0 5 5
0 14 1	201	186	0 12 6	635	470	0 11 10	0 5 11
1 0 0	43	27	0 10 1	953	535	0 8 11	0 4 9
1 4 2	73	55	0 15 2	516	421	0 13 1	0 7 3
1 1 6	620	492	0 13 10	3,318	1,821	0 8 9	0 6 4
0 13 9	606	576	0 13 1	2,592	1,802	0 11 1	0 6 2

Class.	Number of Villages.	Names of Villages.	According to the Old Rates			
			Average of past Collections on Cultivated Land for 44 years.		Land under Cultiva	
			Acres.	Collection in Rupees.	Acres.	Assessment in Rupees.
1	2	3	4	5	6	7
Class II.—Maximum rate Rs. 2-2-0.	8	Wurgaum .....	54	52	156	135
	9	Melanch .....	169	176	284	277
	10	Wunee Boodrook.....	292	491	525	668
	11	Ambore.....	469	502	938	914
	12	Nagaum—Khoord .....	20	11	43	27
	13	Ruwulgaum .....	77	73	258	239
	14	Ajung .....	376	418	610	640
	15	Babhoolwarree.....	235	132	440	213
	16	Nurwhalla.....	246	325	257	259
	17	Gardotar .....	64	49	224	140
	18	Arvee .....	1,027	503	1,248	615
	19	Poormiapara .....	840	648	988	703
	20	Duhyana .....	77	78	52	53
	21	Morana (Pr. Nair) .....	429	391	770	690
	22	Aklar.....	370	362	777	738
	23	Mahal Kalee.....	294	202	849	610
	24	Do. Raiwut ..... } Nair.	202	1,581	240	2,568

of Assessment.		According to the proposed Survey Rates.					
tion in 1861-62.		Roughly estimated result on the Cultivation of the year 1861-62.		Government Arable Land.			
Rate per Acre.	Collection in Rupees.	Survey Assessment.	Rate per Acre.	Acres.	Survey Kunal.	Rate per Acre.	Nominal average value of Soil
8	9	10	11	12	13	14	15
Rs. a. p.			Rs. a. p.			Rs. a. p.	Rs. a. p.
0 13 10	135	190	1 3 6	499	620	1 3 11	0 9 2
0 15 7	277	275	0 13 6	593	516	0 13 11	0 7 2
1 4 4	666	631	1 3 3	944	1,033	1 1 6	0 8 10
0 15 7	909	971	1 0 7	2,344	2,206	0 15 1	0 7 8
0 10 1	20	35	0 13 0	323	261	0 12 11	0 6 2
0 14 10	233	271	1 0 10	426	446	1 0 9	0 7 9
1 0 9	637	516	0 13 6	2,547	1,840	0 11 7	0 6 1
0 7 9	213	273	0 9 11	1,018	559	0 8 9	0 4 8
1 0 1	250	186	0 11 7	1,830	1,003	0 8 9	0 5 2
0 10 0	137	113	0 8 1	774	308	0 6 4	0 3 10
0 7 11	615	774	0 9 11	5,085	2,410	0 7 7	0 4 8
0 11 5	688	681	0 11 0	5,378	3,198	0 9 6	0 5 2
1 0 4	47	34	0 10 6	1,124	654	0 9 4	0 4 11
0 14 4	676	716	0 14 11	981	676	0 11 0	0 7 0
0 15 2	713	692	0 14 3	2,117	1,377	0 10 5	0 6 7
0 11 6	599	693	0 13 1	2,595	1,923	0 11 10	0 6 2
10 11 2	2,564	2,576	10 11 9	519	2,975	5 11 9	0 11 4



Class.	Number of Villages.	Names of Villages.	According to the Old Rates			
			Average of past Collections on Cultivated Land for 44 years.		Land under Cultiva	
			Acres.	Collection in Rupees.	Acres.	Assessment in Rupees.
1	2	3	4	5	6	7
Class II.—Maximum rate Rs. 2-2-0.	25	Mahal Kanera .....	287	1,773	458	2,463
	26	Do. Pandree .....	....	....	....	....
	27	Do. Kussar .....	10	18	15	19
	28	Do. Mullee .....	10	23	26	62
	29	Do. Londa .....	2	2	6	4
	30	Noornuggur .....	246	180	475	297
	31	Japee .....	300	874	449	1,113
	32	Nundul Koord .....	91	117	151	141
	33	Kaswihire.....	59	53	154	152
	34	Bhirdanee.....	112	148	199	230
	35	Bhirdai .....	68	63	147	144
	36	Nundul—Boodrook .....	240	280	780	855
	37	Nana.....	277	236	577	381
	38	Ekluhre.....	25	24	....	....
	39	Vinchoor Koord .....	149	96	320	200
	40	Vinchoor—Boodrook .....	210	165	423	264
	41	Dondwarree .....	133	98	386	241

of Assessment.		According to the proposed Survey Rates.					
tion in 1861-62.		Roughly estimated result on the Cultivation of the year 1861-62.		Government Arable Land.			
Rate per Acre.	Collection in Rupees.	Survey Assessment.	Rate per Acre.	Aeres.	Survey Kumal.	Rate per Acre.	Nominal average value of Soil
8	9	10	11	12	13	14	15
Rs. a. p.			Rs. a. p.			Rs. a. p.	Rs. a. p.
5 6 1	2,463	2,560	5 9 5	684	2,827	4 2 2	0 9 8
....	....	....	....	21	13	0 9 11	....
1 4 3	19	17	1 2 2	38	42	1 1 8	0 8 5
2 6 2	7	55	2 1 10	44	71	1 9 10	0 5 9
0 10 8	4	5	0 13 4	18	13	0 11 7	0 5 10
0 10 0	297	310	0 10 5	2,296	1,451	0 10 1	0 4 11
2 7 8	1,108	1,329	2 15 4	1,489	2,269	1 8 5	0 8 5
0 14 11	137	135	0 14 4	524	410	0 12 6	0 6 8
0 15 10	135	106	0 11 0	622	512	0 13 2	0 5 1
1 2 6	230	154	0 12 5	529	304	0 9 2	0 5 1
0 15 8	144	130	0 14 2	587	472	0 12 10	0 6 7
1 1 6	844	539	0 11 1	3,191	1,761	0 8 10	0 4 7
0 10 7	373	454	0 12 7	1,922	1,202	0 10 0	0 5 10
....	....	....	....	446	296	0 10 7	....
0 10 0	198	298	0 14 11	694	539	0 12 5	0 7 0
0 10 0	264	347	0 13 2	1,047	756	0 11 7	0 6 2
0 10 0	241	281	0 11 8	754	508	0 10 9	0 5 6

Class.	Number of Villages.	Names of Villages.	According to the Old Rates			
			Average of past Collections on Cultivated Land for 44 years.		Land under Cultiva	
			Acrs.	Collection in Rupees.	Acrs.	Assessment in Rupees.
1	2	3	4	5	6	7
CLASS II.—Maximum rate Rs. 2-4-0.	42	Wissurna .....	225	223	458	397
	43	Joonwana .....	393	276	677	474
	44	Hendroon .....	364	292	751	492
	45	Mandul .....	112	81	239	156
	46	Sanjoree .....	66	52	190	133
	47	Oorana .....	390	374	678	473
	48	Gotana .....	371	263	580	365
	49	Chowgaum ..	526	394	911	679
	50	Satmana .....	271	171	705	440
	51	Lohoghur .....	208	179	210	188
	52	Lonkheira .....	358	461	468	554
	53	Nutoorlee .....	76	43	153	96
	54	Droor Khoord .....	260	309	291	349
	55	Do. Boodrook .....	694	900	1,205	1,427
	56	Kundalla do. ....	246	283	405	422
	57	Sirdhane .....	549	521	1,399	1,392
	58	Kowtce .....	799	525	1,326	927

of Assessment.		According to the proposed Survey Rates.					
tion in 1861-62.		Roughly estimated result on the Cultivation of the year 1861-62.		Government Arable Land.			
Rate per Acre.	Collection in Rupces.	Survey Assessment.	Rate per Acre.	Acres.	Survey Kumal.	Rate per Acre.	Neminal average value of Soil
8	9	10	11	12	13	14	15
Rs. a. p.			Rs. a. p.			Rs. a. p.	Rs. a. p.
0 13 10	395	299	0 10 5	1,346	799	0 9 6	0 4 10
0 11 2	474	391	0 9 3	2,184	1,107	0 8 1	0 4 1
0 10 6	480	624	0 13 4	2,706	1,936	0 11 5	0 6 2
0 10 5	151	174	0 11 8	1,569	857	0 8 9	0 5 5
0 11 2	133	137	0 11 6	1,124	716	0 10 2	0 5 5
0 11 2	468	653	0 15 5	1,641	1,192	0 11 7	0 7 3
0 10 1	291	476	0 13 2	1,519	1,081	0 11 5	0 6 2
0 11 11	633	698	0 12 3	2,298	1,462	0 10 2	0 5 9
0 10 0	435	366	0 8 4	1,636	860	0 8 5	0 3 11
0 14 4	187	108	0 8 3	1,813	777	0 6 10	0 3 10
1 2 11	554	367	0 12 7	1,537	1,083	0 11 3	0 5 11
0 10 0	96	88	0 9 2	512	311	0 9 9	0 4 4
1 3 2	324	172	0 9 5	1,666	818	0 7 10	0 4 3
1 2 11	1,392	894	0 11 10	3,322	2,297	0 11 1	0 5 5
1 1 1	427	304	0 12 0	1,837	1,027	0 8 11	0 5 7
0 15 11	1,357	961	0 11 0	5,232	2,720	0 8 4	0 5 2
0 11 2	923	777	0 9 5	6,803	3,055	0 7 2	0 4 5

Class.	Number of Villages.	Names of Villages.	According to the Old Rate			
			Average of past Collections on Cultivated Land for 44 years.		Land under Cultivation	
			Acres.	Collection in Rupees.	Acres.	Assessment in Rupees.
1	2	3	4	5	6	7
Class II.—Maximum rate Rs. 2-2-0.	59	Nowlane .....	244	218	437	434
	60	Nimdalle .....	412	560	764	809
	61	Chimnapooree .....	144	142	218	209
	62	Borewihecre .....	354	275	681	483
	63	Tulwarra .....	233	217	519	421
	64	Sitana .....	74	59	179	112
	65	Chinchkheira .....	407	554	718	741
	66	Amdul .....	107	134	298	278
	67	Lowlee .....	139	99	366	242
	68	Achar .....	173	253	415	476
	69	Wujeerkheira .....	98	70	246	163
	69	Villages.....	17,370	19,440	31,185	31,399
Class III.—Maximum rate Rs. 1-1-4.	1	Dholee .....	95	61	389	243
	2	Nimgool .....	364	523	1,151	1,097
	3	Bodegaum .....	59	57	246	232
	4	Balere .....	149	199	222	213
	5	Koondana Velhana .....	116	117	272	265

of Assessment.		According to the proposed Survey Rates.					
tion in 1861-62.		Roughly estimated result on the Cultivation of the year 1861-62.		Government Arable Land.			
Rate per Acre.	Collection in Rupees.	Survey Assessment.	Rate per Acre.	Aeres.	Survey Kunal.	Rate per Acre.	Nominal average value of Soil
8	9	10	11	12	13	14	15
Rs. a. p.			Rs. a. p.			Rs. a. p.	Rs. a. p.
0 15 11	434	247	0 9 1	2,153	928	0 6 11	0 4 1
1 11 0	780	590	0 12 4	1,838	1,212	0 10 7	0 5 9
0 15 4	209	154	0 11 4	784	471	0 9 7	0 5 4
0 11 4	466	364	0 8 7	2,443	1,190	0 7 10	0 3 10
0 13 0	410	399	0 12 4	2,654	1,518	0 9 2	0 5 9
0 10 0	108	103	0 9 2	1,726	838	0 7 9	0 4 4
1 0 6	724	590	0 13 2	1,425	991	0 11 2	0 5 9
0 14 11	278	254	0 13 8	986	716	0 11 7	0 6 5
0 10 7	241	207	0 9 1	1,572	748	0 7 7	0 4 2
1 2 4	476	274	0 10 7	1,523	911	0 9 7	0 4 7
0 10 7	163	195	0 12 8	932	554	0 9 6	0 5 10
1 0 1	30,888	29,274	0 15 0	111,028	74,339	0 10 9	....
0 10 0	243	263	0 10 10	1,012	617	0 9 9	0 5 9
0 15 3	1,074	1,013	0 14 1	2,617	1,971	0 12 1	0 7 4
0 15 1	232	212	0 13 9	669	484	0 11 7	0 7 4
0 15 4	202	167	0 12 0	1,076	1,249	1 2 7	0 6 5
0 15 7	265	179	0 10 6	1,086	570	0 8 5	0 5 3

Class.	Number of Villages.	Names of Villages.	According to the Old Rates			
			Average of past Collections on Cultivated Land for 11 years.		Land under Cultiva	
			Acres.	Collection in Rupees.	Acres.	Assessment in Rupees.
1	2	3	4	5	6	7
Class III.—Maximum rate Rs. 1-14-0.	6	Dhamungaum .....	142	207	295	311
	7	Dhandree .....	100	61	210	135
	8	Sudgaum .....	153	107	120	75
	9	Nandra .....	501	530	644	624
	10	Khundalla Koord.....	196	152	293	190
	11	Bambhoorle .....	122	86	83	58
	12	Nathree.....	49	26	86	54
	13	Sookur .....	72	39	49	37
	14	Mehergaum .....	742	686	1,174	1,037
	15	Bhuradec .....	19	10	16	11
	16	Khuradec .....	40	23	139	109
	17	Sawuntjai .....	22	12	87	54
	18	Welhanc Boodrook .....	384	317	803	571
	19	Tikhee .....	128	96	236	147
	20	Dedurgaum .....	45	25	161	103
	21	Sunukwarree .....	21	13	68	45
	22	Duhivee .....	29	11	129	80

of Assessment.		According to the proposed Survey Rates.					
tion in 1861-62.		Roughly estimated re- sult on the Cultivation of the year 1861-62.		Government Arable Land.			
Rate per Acre.	Collection in Rupees.	Survey Assess- ment.	Rate per Acre.	Acres.	Survey Kunal.	Rate per Acre.	Nominal average value of Soil
8	9	10	11	12	13	14	15
Rs. a. p.			Rs. a. p.			Rs. a. p.	Rs. a. p.
1 0 10	311	199	0 10 10	1,016	559	0 8 10	0 5 7
0 10 3	135	131	0 10 0	379	216	0 9 1	0 5 4
0 10 0	75	70	0 9 4	968	489	0 8 1	0 5 0
0 15 6	619	358	0 8 10	1,895	952	0 8 0	0 4 9
0 10 5	179	232	0 12 8	938	731	0 12 6	0 6 9
0 11 2	58	39	0 7 6	544	272	0 8 0	0 4 1
0 10 1	54	31	0 5 9	481	180	0 6 0	0 3 1
0 12 1	37	21	0 6 10	903	334	0 5 11	0 3 7
0 14 2	1,030	617	0 8 5	3,115	1,337	0 6 10	0 4 2
0 11 0	10	12	0 12 0	232	139	0 9 7	0 6 3
0 12 7	109	94	0 10 10	1,036	521	0 8 1	0 5 5
0 9 11	54	46	0 8 6	497	272	0 8 9	0 4 7
0 11 5	569	478	0 9 6	3,532	1,991	0 9 0	0 5 1
0 10 0	133	129	0 8 9	683	354	0 8 4	0 4 8
0 10 3	94	75	0 7 5	641	279	0 7 0	0 3 11
0 10 7	37	39	0 9 2	388	161	0 6 8	0 4 11
0 9 11	80	93	0 11 6	412	285	0 11 1	0 6 2



Class.	Number of Villages.	Names of Villages.	According to the Old Rates			
			Average of past Collections on Cultivated Land for 41 years.		Land under Cultiva	
			Acres.	Collection in Rupees.	Acres.	Assessment in Rupees.
1	2	3	4	5	6	7
CLASS III.—Maximum rate Rs. 1-14.	23	Welhane Koord .....	122	152	283	281
	24	Chicklce .....	36	28	48	44
	25	Rajalla .....	....	....	....	....
	26	Rootalla .....	78	46	85	53
	27	Konjur .....	1,107	747	1,057	794
	28	Wunnee Koord .....	44	33	142	107
	29	Mareshewrec .....	24	15	70	47
	29	Villages .....	4,952	4,379	8,558	7,017
	122	Villages .....	33,859	41,349	59,454	63,641

of Assessment.		According to the proposed Survey Rates.					
tion in 1861-62.		Roughly estimated results on the Cultivation of the year 1861-62.		Government Arable Land.			
Rate per Acre.	Collection in Rupees.	Survey Assessment.	Rate per Acre.	Aeres.	Survey Kumal.	Rate per Acre.	Nominal average value of Soil
8	9	10	11	12	13	14	15
Rs. a. p.			Rs. a. p.			Rs. a. p.	Rs. a. p.
0 15 11	281	249	0 14 1	540	456	0 13 6	0 7 6
0 14 8	44	43	0 14 4	639	386	0 9 8	0 7 6
....	....	....	....	137	71	0 8 3	....
0 10 0	46	44	0 8 3	1,001	441	0 7 1	0 4 5
0 12 0	783	651	0 9 10	4,158	2,111	0 8 1	0 5 2
0 12 1	101	116	0 13 1	778	495	0 10 2	0 7 0
0 10 9	46	40	0 9 2	594	277	0 7 6	0 4 11
0 13 1	6,901	5,651	0 10 7	31,967	18,200	0 9 1	....
1 1 2	62,753	60,730	1 0 4	188,992	136,023	0 11 6	....

P. A. ELPHINSTONE, Captain,  
Acting Supt. Revenue Survey and Assessment, Khandeish.

**DETAILED FIGURED STATEMENT *exhibiting the Source and Amount of ever***

OFFICIAL YEAR.	Total Number of Villages.	GOVERNMENT LAND IN CULTIVATION.						I (
		Cultivated Villages.	Total Acres.	Deduct Land left un- cultivated.	Remainder of Land actually cultivated.	Assessment of Total Acres under cultivation (Column 4).	Deduct Assessment of Land left uncultivated (Column 5).	
1	2	3	4	5	6	7	8	
			Acres.	Acres.	Acres.	Rs.	Rs.	
1818-19..	149	104	16,002	....	16,002	49,157	....	
1819-20..	148	105	15,731	....	15,731	48,856	....	
1820-21..	148	106	16,369	....	16,369	53,196	....	
1821-22..	149	110	21,816	....	21,816	51,546	....	
1822-23..	149	111	21,454	....	21,454	48,311	....	
1823-24..	149	110	18,895	36	18,859	48,312	45	
1824-25..	148	114	19,876	168	19,708	45,530	936	
1825-26..	148	113	21,620	....	21,620	47,761	....	
1826-27..	148	114	21,473	636	20,837	45,736	837	
1827-28..	148	116	21,961	229	21,732	47,064	276	
1828-29..	148	115	23,030	95	22,935	48,075	226	
1829-30..	148	117	22,781	740	22,041	45,475	1,060	
1830-31..	148	118	24,443	130	24,313	43,746	202	
1831-32..	148	123	25,164	237	24,927	39,008	393	
1832-33..	148	124	23,975	2,859	21,116	37,963	4,404	
1833-34..	148	128	27,391	266	27,125	42,897	386	
1834-35..	148	124	31,777	228	31,549	42,915	203	
1835-36..	148	125	32,318	35	32,283	49,176	40	
1836-37..	148	125	33,718	171	33,547	50,438	203	

1,003	....	1,003	40	....	40	....	51,091
1,003	53	950	12	....	12	....	51,775
1,700	....	1,700	9	....	9	....	55,607
1,800	169	1,631	9	....	9	....	48,600
1,887	....	1,887	9	....	9	....	50,536
1,825	....	1,825	171	....	171	....	51,695
2,231	511	1,720	278	....	278	....	26,160
1,720	....	1,720	852	....	852	....	49,177
1,755	280	1,475	1,285	130	1,155	....	45,374
853	....	853	1,896	103	1,793	....	47,269
853	....	853	1,999	....	1,999	....	47,806
848	....	848	1,645	99	1,546	....	42,315
848	....	848	1,579	12	1,567	....	43,737
493	....	493	1,745	105	1,640	....	38,815
205	....	205	2,281	772	1,509	....	26,170
223	21	202	2,415	351	2,064	....	38,237
19	....	19	1,233	8	1,225	....	43,126
19	....	19	1,421	72	1,349	....	48,292
18	....	18	1,396	65	1,331	....	47,826



Numbers.	NAMES OF VILLAGES.							
		Cultivators.	Employed as Marathi Clerks.	Kooltee or Weavers.	Dockandars and Sowens or Shop- keepers.	Sonar or Gold- smiths.	Sootars or Carpen- ters.	● Lohars or Smiths.
1	2	3	4	5	6	7	8	9
1	Dhoolia.....	2,512	1,226	158	1,181	371	110	125
2	Nimkheira .....	221	13	13	..	7	6	..
3	Arnee .....	59	..	..	..	..	..	..
4	Balapoorce .....	119	..	..	..	..	10	52
5	Moharee .....	149	..	..	..	..	8	..
6	Achar .....	119	..	..	..	..	..	..
7	Awdhan .....	118	..	..	..	..	..	..
8	Pimpree .....	17	..	..	..	4	..	..
9	Bhiladee .....	164	3	..	..	11	..	..
10	Nowlane .....	109	..	..	..	..	..	..
11	Garootar .....	46	..	..	..	..	..	..
12	Melanch .....	54	..	..	..	13	..	..
13	Nagaum (P.S.) .....	252	..	..	..	2	..	..
14	Chinchkheira .....	227	43	..	14	23	4	..
15	Sanjorce .....	21	..	..	2	..	..	..
16	Sawulde .....	17	..	..	..	..	..	..
17	Vinchoor (B) .....	135	..	..	..	..	..	..
18	Wurkheira .....	328	4	55	17	7	8	..
19	Bhirdana .....	64	..	..	..	..	..	..
20	Bhirdai .....	28	..	..	..	..	..	..
21	Mehergaum .....	359	..	..	26	6	4	4
22	Japce .....	104	..	..	..	..	..	..
23	Koondana—Wurkeira .....	111	..	5	..	..	4	..
24	Wunee (B) .....	155	1	..	13	10	12	..
25	Wurjai .....	239	21	13	17	20	10	..
26	Dewpoor .....	61	..	3	1	..	6	..
27	Kawtee .....	118	..	..	..	..	..	..
28	Phangue .....	349	72	86	95	88	13	4
29	Ajung .....	184	7	..	..	..	6	..
30	Babhoolwarree .....	78	..	..	..	..	..	..



HOUSES.				CASTE.		
Kind.					Male	
Tiled.	Flat Roofed.	Thatched.	TOTAL.		Below 15 years old.	Above 15 years old.
1	2	3	4	5	6	7
3	482	11	496	Brahmins.....	450	751
7	2,315	200	2,522	Coonbee .....	2,799	3,544
..	5	..	5	Goluck .....	12	17
..	1	1	2	Joogee .....	2	5
2	404	14	420	Murwadee .....	183	448
..	257	6	263	Thelee .....	258	311
..	252	1	253	Ladshaka Wancee .....	155	230
..	15	2	17	Lingayet do. ....	31	6
2	40	6	48	Gosavee .....	25	
1	161	25	187	Rajpooth.....	168	20
8	599	31	638	Mallee .....	704	825
..	108	13	121	Coollee .....	111	150
18	49	14	81	Koombhar .....	64	90
..	2	..	2	Mahan-Bhow .....	3	3
2	124	4	130	Sootar .....	103	133
..	59	1	60	Lohar .....	56	77
..	29	6	35	Goorow .....	19	25
..	8	..	8	Sallee .....	19	25
..	30	1	31	Thakoor .....	36	34
..	27	4	31	Biragee .....	14	37
6	61	17	84	Purdasee.....	70	153
..	378	40	418	Dhungur.....	396	526
2	187	1	190	Sonar .....	239	353
..	58	..	58	Lindaree .....	41	51
..	167	3	170	Simpee.....	197	261
4	30	25	59	Dhoobie .....	52	73
..	2	20	22	Gondalee.....	20	25
..	56	77	133	Gowlee .....	144	138
25	395	216	636	Mussulman.....	637	889
..	136	26	162	Navee .....	159	214



Shimpee or Tugarees.	Kullal or Arrack- distillers.	Rungarees or Dyers.	Bluk-Shooke or Brahmin Beggars.	Beggars.	Outdoor Servants.	Sonarees or Lime and Coal burners.	Wadler or Native Doctors.	Cazees.	TOTAL.	REMARKS.
10	41	42	43	44	45	46	47	48	49	50
5	..	..	..	..	19	..	..	..	67	
..	..	..	..	..	30	..	..	..	149	
..	..	..	..	..	50	..	..	..	136	
..	..	..	..	..	..	..	..	..	8	
..	..	..	..	..	..	..	..	..	28	
..	..	..	..	..	39	..	..	..	188	
..	..	..	..	..	17	..	..	..	149	
..	..	..	5	15	21	..	..	..	308	
..	..	..	..	..	15	..	..	..	96	
..	..	..	..	..	..	..	..	..	36	
..	..	..	..	..	24	..	..	..	169	
..	..	..	..	..	33	..	..	..	235	
..	..	..	..	..	20	..	..	..	47	
..	..	..	..	..	31	..	..	..	260	
..	..	..	..	..	..	..	..	..	22	
26	..	..	..	13	66	..	..	..	453	
..	..	..	..	..	4	..	..	..	68	
..	..	..	..	..	26	..	..	..	215	
6	..	..	..	..	8	..	..	..	151	
5	..	..	..	6	7	..	..	..	654	
8	..	6	43	55	210	9	..	..	2,408	
6	4	..	13	37	400	..	..	..	1,945	
..	..	..	..	..	..	..	..	..	63	
..	..	..	..	22	18	..	..	..	113	
98	28	113	634	885	3,274	34	4	3	47,610	

P. A. ELPHINSTONE, Captain,  
Acting Superintendent of Revenue Survey and Assessment, Khandeish.

91	Koondana Welhana.....	44	..	..	..	..	..	..
92	Welhana (K) .....	104	..	..	..	..	..	..
93	Tikhee .....	75	..	..	..	..	..	..
94	Duhyanee .....	8	..	..	..	..	..	..
95	Sittore .....	11	..	..	..	..	..	..
96	Khundalla (B) .....	114	..	2	..	..	..	..
97	Oobhund .....	95	..	..	..	..	..	..
98	Loukheira.....	160	..	..	7	..	..	..
99	Lohoghur .....	52	..	..	7	5	..	..
100	Ajnalla .....	30	..	..	..	..	..	..
101	Sudgaum .....	76	..	..	..	..	..	..
102	Lulling .....	96	..	..	8	..	..	..
103	Hingne .....	18	..	..	..	..	..	..
104	Bhudanee .....	169	..	..	..	..	1	..
105	Tunukwaree .....	22	..	..	..	..	..	..
106	Gondoor .....	289	..	4	2	..	..	..
107	Pudulda .....	43	..	..	..	..	3	..
108	Deoor (K) .....	107	..	3	..	..	..	..
109	Bhokur.....	101	..	..	..	..	..	..
110	Ambare.....	471	3	..	11	12	7	..
111	Koosoomba .....	735	5	261	125	113	34	..
112	Sirood .....	789	6	49	121	45	10	26
113	Jooneer.....	59	..	..	..	..	..	..
114	Dhandra .....	40	..	6	..	..	..	..
		18,528	1,638	849	2,374	999	485	321

[illegible]

31	61	Dhandree .....	87	..	..	..	..	..	..
32	62	Anukwaree .....	48	..	..	..	..	..	..
33	63	Mohogacc .....	71	..	..	..	..	..	..
34	64	Airee .....	262	20	..	96	7	25	9
35	65	Poorneparee .....	159	4	..	12	7	..	..
36	66	Joonwana .....	164	3	..	6	5	..	..
37	67	Kuradee .....	60	..	..	..	..	..	..
38	68	Kheir .....	431	45	..	101	50	15	11
39	69	Tulwarra .....	74	..	..	..	..	..	..
40	70	Aklar .....	110	..	..	..	..	4	..
41	71	Muhindlee .....	220	2	..	34	..	..	10
42	72	Chowgaum .....	147	..	..	..	..	10	..
43	73	War .....	342	2	9	12	55	23	6
44	74	Koondance .....	165	..	..	2	..	..	..
45	75	Nair .....	815	93	..	151	27	16	8
46	76	Koonjur .....	318	22	35	59	14	23	..
47	77	Dholec .....	70	..	..	3	..	..	..
48	78	Welhane (B) .....	161	..	5	2	..	8	..
49	79	Sirdhane .....	293	..	10	1	3	4	..
50	80	Nandree .....	153	..	4	1	..	8	15
51	81	Mahal Kussar .....	..	..	..	..	..	..	..
52	82	Mahal Mullee .....	..	..	..	..	..	..	..
53	83	Mahal Kanrec .....	..	..	..	..	..	..	..
54	84	Mahal Raiwut .....	..	..	..	..	..	..	..
55	85	Bodegaum .....	69	..	..	..	..	..	..
56	86	Amdur .....	42	..	..	..	..	..	..
57	87	Mhardur .....	16	..	..	..	..	..	..
58	88	Hudsoonee .....	48	..	..	..	..	..	..
59	89	Moreshweree .....	19	..	..	..	..	..	..
60	90	Ravere .....	36	..	..	..	..	..	..

..	..	..	..	..	..	5	..	..	55
..	..	..	..	1	..	..	..	..	248
..	..	..	2	22	12	..	..	..	931
102	..	..	..	..	7	..	..	..	228
..	..	..	8	..	..	..	..	..	241
52	..	..	11	19	..	..	..	..	379
29	..	..	..	..	..	..	..	..	273
..	..	..	..	2	..	..	..	..	361
..	..	..	..	..	29	..	..	..	101
148	..	..	..	..	..	..	..	..	265
..	..	..	..	2	..	..	..	..	124
..	..	..	..	..	..	..	..	..	152
..	..	..	..	1	..	..	..	..	59
..	..	..	..	5	..	..	..	..	337
..	..	..	..	..	3	..	..	..	93
..	..	9	13	10	115	..	..	..	1,520
..	..	..	..	6	..	..	..	..	454
..	..	..	..	4	1	..	..	..	245
..	..	..	..	..	7	..	..	..	113
..	..	..	..	..	24	..	..	..	222
..	..	..	..	..	..	..	..	..	53
..	..	..	..	6	14	..	..	..	100
..	..	..	..	..	..	..	..	..	104
..	..	..	..	23	..	..	..	..	617
45	..	..	..	..	..	..	..	..	181
..	..	..	..	3	..	..	..	..	279
..	..	..	..	..	..	..	..	..	118
..	..	..	..	..	21	..	..	..	148
..	..	..	..	..	..	..	..	..	58
8	..	..	..	1	36	..	..	..	286

1	Kaswihire .....	20	..	..	..	..	..	..
2	Sowdana .....	110	..	..	..	..	..	..
3	Mooktee .....	452	14	6	40	12	12	16
4	Dhamungaum .....	88	..	..	..	..	..	..
5	Nurwhalla .....	76	..	..	..	..	11	..
6	Nimgool .....	184	4	..	8	..	20	..
7	Kalkheira .....	139	..	..	..	..	..	..
8	Nukan .....	197	..	..	..	5	11	..
9	Nundal (K) .....	49	..	10	..	..	..	..
10	Sawlee .....	77	..	..	..	..	..	..
11	Wisurna .....	84	..	..	..	..	..	..
12	Borewihire .....	97	4	..	..	..	..	..
13	Dondwara .....	34	..	..	..	..	..	..
14	Wulwaree .....	98	..	11	..	..	6	..
15	Koolthee .....	69	..	..	..	..	..	..
16	Borekoond .....	518	18	31	174	67	18	26
17	Nimdalle .....	257	..	..	3	..	..	..
18	Morana (P. Nair) .....	194	..	22	..	..	..	..
19	Mandul .....	64	..	..	..	..	..	..
20	Hendroon .....	122	..	..	..	..	3	..
21	Noornuggur .....	..	..	..	..	..	..	..
22	Balere .....	50	..	5	11	..	..	..
23	Khundalla (K) .....	44	..	..	..	..	2	2
24	Deoor (B) .....	256	..	48	11	10	10	7
25	Gotanee .....	112	..	..	..	..	..	..
26	Ooranee .....	190	..	..	..	..	..	..
27	Moranee .....	61	..	..	..	..	..	..
28	Nundul (B) .....	104	3	..	..	..	..	..
29	Chanda .....	40	..	..	..	..	..	..
30	Nana .....	154	..	..	..	..	..	..

..	..	..	..	..	..	5	..	..	55
				1					248

617	16	89	331	350	62	20	..	..	11,765
..	..	..	..	14	..	..	..	..	352
..	..	..	..	..	22	..	..	..	115
..	..	..	..	1	..	..	..	..	249
..	..	..	..	7	40	..	..	..	233
/ 154	..	..	..	3	..	..	..	..	320
..	..	..	..	3	..	..	..	..	161
..	..	..	..	5	..	..	..	..	238
..	..	..	..	18	..	..	..	..	315
..	..	..	..	1	1	..	..	..	159
..	..	..	..	..	..	..	..	..	64
..	..	..	..	..	..	..	..	..	82
..	..	..	..	..	..	..	..	..	338
10	..	..	10	20	..	..	..	..	504
..	..	..	..	..	..	..	..	..	28
..	..	..	..	..	..	..	..	..	85
..	..	..	..	..	..	..	..	..	190
..	..	..	..	7	..	..	..	..	603
47	..	..	..	..	..	..	..	..	125
..	..	..	..	..	26	..	..	..	54
..	..	..	5	14	18	..	..	..	640
8	..	..	..	12	..	..	..	..	320
..	..	..	..	6	..	..	..	..	172
..	..	..	..	..	33	..	..	..	341
..	..	..	..	3	95	..	..	..	593
40	..	..	..	16	..	..	..	..	220
..	..	..	..	..	..	..	..	..	196
..	2	..	16	30	..	..	..	..	1,278
..	..	..	7	..	..	..	..	..	267
79	..	..	..	1	..	..	..	..	218

40	857	..	169	20	39	136	216	123	273	317	60	36	96	235	38	1
..	..	..	..	..	..	1	..	..	..	34	..	4	22	14	..	..
..	..	..	..	..	..	..	..	..	4	20	..	10	..	..	..	..
..	2	..	..	..	..	22	32	..	7	..	..	..	..	4	..	..
..	2	..	..	..	..	..	13	..	..	9	..	..	..	5	..	..
..	..	..	..	..	..	..	..	..	4	5	..	..	..	27	3	..
..	..	..	..	..	..	..	..	..	..	8	..	..	..	32	..	..
..	41	..	..	8	..	..	62	..	..	4	9	..	76	6	6	..
7	5	..	..	..	..	9	..	..	5	28	..	..	50	4	..	..
4	..	..	..	..	..	..	..	..	..	5	..	..	34	5	..	..
..	..	..	..	..	..	..	..	..	..	2	..	..	14	2	..	..
..	..	..	..	..	..	..	..	..	..	7	..	..	..	8	..	..
..	..	..	..	..	..	7	..	..	6	19	..	..	43	3	..	..
15	..	..	..	..	..	..	..	10	13	36	..	1	28	17	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..
..	40	..	..	..	..	..	..	..	..	5	..	..	23	..	..	..
..	..	..	..	..	..	..	..	..	..	20	..	..	32	3	..	..
13	..	..	..	..	..	5	..	..	7	4	11	6	110	6	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	14	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	7	..	4	21	60	..	4	60	11	..	..
4	..	..	..	..	..	19	..	..	11	33	6	1	59	16	..	..
8	..	..	..	..	..	..	..	..	..	2	4	10	14	1	..	..
..	22	..	..	..	..	4	..	3	15	44	..	6	..	1	..	..
7	..	..	..	..	..	3	..	8	24	56	..	..	..	6	20	..
..	6	..	..	..	..	3	..	2	7	17	10	..	..	5	..	..
..	..	..	..	..	..	..	..	..	..	21	..	11	54	1	..	..
26	12	..	..	75	..	15	..	18	24	95	1	..	82	24	..	..
3	..	..	..	..	..	..	..	..	..	19	2	3	28	5	..	..
..	..	..	..	..	..	..	..	..	19	17	..	..	17	4	..	..





2	5					20	33	32	4	30	10
16					9	5	41	74	6	35	12
								13		58	4
12	8				8		11	50	5	15	2
6						35		37	4	76	4
								18	7	41	7
									25	39	4
								13			
								23		14	3
								14	3	16	
								35	6	6	4
	4							16		8	
								46	11	95	1
15	25				5	12	17	15		6	
3							21	71	9	29	14
							2	37	6	97	11
										9	
								9		33	
								13	22	28	1
										53	
	2							8			
	15										
5	4										
							29	78	14	37	4
								2		56	36
								26		21	1
								11	15	60	
								6	5	19	2
								5	2	10	2
										9	4
							6	35	6	33	7

[illegible]

[illegible]

30 93

..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	7	5	..	..	..	..	..	..	..	..
..	..	..	3	..	..	..	..	..	..	..	..	..
E 7	..	..	5	..	..	..	5	1	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	6	..	..	..	..	..	..	..	..	..
..	..	..	..	13	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	6	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	19	..	..	14	..	..	..	..	..	..
78	45	..	52	24	..	58	102	11	5	..	14	..
19	8	44	37	23	..	2	15	17	5	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..
806	99	155	749	281	41	230	987	368	182	111	39	17

*which the POPULATION of TALOOKA DHOOLIA is engaged.*

WHICH THE POPULATION IS ENGAGED.

Pinjarees or Cotton-cleaners.	Sepoys or Peons.	Ootaries or Bell-casters.	Bhooses or Fishermen.	Lindaree or Cotton-carders.	Mulwaee or Confectioners.	Dhobies.	Gowlees or Milk-vendors.	Koomblars or Potters.	Chambers or Shoemakers.	Mhars.	Maug.	Koolces.	Rukwuldars or Field-labourers.	Indoor Servants.	Pardee or Hunters.	Booroods or Basket-makers.
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
..	..	..	..	..	..	..	..	..	..	4	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	9	..	..	10	..	..	..
..	..	..	..	..	..	..	..	..	..	8	..	..	2	..	..	..
..	..	..	..	..	..	..	..	..	..	9	..	..	9	..	..	..
..	..	..	..	..	..	..	..	..	9	3	..	..	5	..	..	..
..	..	..	..	..	..	..	..	..	..	8	4	..	21	1	..	..
4	..	..	..	..	..	..	..	..	12	42	7	..	15	2	..	..
..	..	..	..	..	..	..	..	..	..	8	..	..	9	..	..	..
..	..	..	..	..	..	..	..	..	..	1	..	..	5	..	..	..
..	..	..	..	..	..	..	24	..	13	4	..	..	42	10	..	..
..	..	..	..	..	..	..	..	..	..	26	..	..	26	16	..	..
..	..	..	..	..	..	..	..	3	5	7	..	..	9	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	25	6	..	..
7	..	..	..	..	..	..	..	3	3	23	..	..	8	3	..	..
..	..	..	..	..	..	..	..	..	8	29	..	..	7	11	..	..
7	..	..	..	..	..	..	..	..	..	15	..	..	33	9	..	..
7	..	..	..	..	..	..	..	..	16	35	4	13	22	2	..	..
35	38	..	8	50	6	26	..	24	42	56	6	23	75	16	..	..
33	4	..	19	..	..	11	36	14	15	44	8	23	10	32	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	..	..
..	..	..	..	..	..	..	7	..	3	18	..	..	19	..	..	..
355	1,392	21	242	153	56	330	533	319	940	2,401	315	400	2,990	889	64	121

TABLE D.

STATISTICAL RETURN *of* HOUSES, INHABITANTS, and CATTLE

## INHABITANTS.

		Females.								
TOTAL.	Can read or are learning.	Below 15 years old.	Married.	Mother or other relative whose husband is away.	Kept.	Servant.	Not Relatives.	TOTAL.	Can read or are learning.	Total Columns 8 and 16.
8	9	10	11	12	13	14	15	16	17	18
1,201	942	276	539	227	11.	3	..	1,056	1	2,257
6,343	222	2,136	3,114	970	16	10	1	6,247	..	12,590
29	10	10	15	3	..	..	..	28	..	57
7	....	4	4	2	..	..	..	10	..	17
631	397	160	219	84	2	..	..	465	..	1,096
569	13	205	267	73	..	1	..	546	..	1,115
385	142	101	168	54	1	..	..	324	..	709
98	24	24	56	28	..	..	..	108	..	206
77	9	13	26	14	1	..	..	54	..	131
371	15	116	157	51	1	..	..	325	..	696
1,527	50	515	701	198	..	..	..	1,414	..	2,941
261	2	85	131	38	2	..	..	256	..	517
154	....	62	84	19	..	..	..	165	..	319
6	1	4	2	2	..	..	..	8	..	14
236	30	91	115	30	1	..	..	237	..	473
133	7	52	67	14	..	..	..	133	..	266
44	....	24	21	7	..	..	..	52	..	96
44	1	14	19	7	..	..	..	40	..	84
70	4	32	31	10	..	..	..	73	..	143
51	8	10	19	10	..	..	..	39	..	90
223	48	55	90	50	4	..	..	199	..	422
922	9	321	455	143	1	..	..	920	..	1,842
592	108	162	273	60	..	..	..	495	..	1,087
92	13	25	51	13	..	..	..	89	..	181
458	136	141	211	47	1	..	..	400	..	858
125	1	35	54	18	..	..	..	107	..	232
45	1	28	19	15	..	..	..	62	..	107
282	1	104	123	39	..	..	..	266	..	548
1,526	80	587	648	309	4	1	2	1,551	2	3,077
373	8	126	180	64	..	..	..	370	..	743

1,771	372	114	256	94	973	177	67	....
9,283	1,971	1,336	4,714	740	9,666	2,359	188	....
45	5	7	10	....	30	6	5	....
11	5	1	....	4	4	2	....	....
865	183	48	124	160	453	145	42	....
808	226	81	336	182	387	180	4	....
549	93	67	289	81	556	162	22	....
165	39	2	47	44	28	11	3	....
103	15	13	27	9	96	19	20	....
479	118	99	345	50	753	171	31	....
2,169	422	350	1,063	45	1,904	391	16	6
401	58	58	108	10	177	30	4	....
240	49	30	15	24	38	26	3	162
9	4	1	4	1	1	3	....	....
356	67	50	68	33	181	84	7	....
192	36	38	44	17	113	29	5	....
63	14	19	9	2	13	12	5	....
64	14	6	2	1	22	3	1	....
97	30	16	31	4	56	22	16	....
74	8	8	12	2	48	18	4	....
330	80	12	45	16	91	28	20	....
1,360	268	214	607	53	2,084	292	17	....
806	201	80	175	44	272	94	10	....
139	27	15	97	4	96	54	....	....
655	133	70	118	47	142	65	3	....
167	51	14	40	11	32	19	5	2
80	23	4	....	....	5	1	1	....
355	149	44	15	127	180	1,161	....	....
2,286	584	201	312	169	392	178	72	....
536	144	63	104	21	348	72	5	....



TABLE D.

STATISTICAL RETURN *of* HOUSES, INHABITANTS, *and* CATTLE

## INHABITANTS.

		Females.								
TOTAL.	Can read or are learning.	Below 15 years old.	Married.	Mother or other relative whose husband is away.	Kept.	Servant.	Not Relatives.	TOTAL.	Can read or are learning.	Total Columns 8 and 16.
8	9	10	11	12	13	14	15	16	17	18
1,217	40	397	448	200	1	..	..	1,046	..	2,263
2,360	1	867	1,164	240	6	..	..	2,277	..	4,637
165	3	52	78	23	..	..	..	153	..	318
491	....	160	217	43	..	..	..	420	..	911
170	....	60	79	20	1	..	..	160	..	330
1,656	4	555	886	250	3	1	..	1,695	..	3,351
13	....	5	5	2	..	..	..	12	..	25
126	8	25	66	14	..	..	..	105	..	231
10	3	2	3	6	..	..	..	11	..	21
54	25	15	19	4	..	..	..	38	..	92
2	1	....	1	....	..	..	..	1	..	3
69	....	32	30	11	..	..	..	73	..	142
13	....	8	5	3	..	..	..	16	..	29
40	3	13	19	6	..	..	..	38	..	78
184	1	76	76	19	..	..	..	171	..	355
22	....	6	14	....	..	..	..	20	..	42
48	12	15	27	6	..	..	..	48	..	96
39	5	8	17	10	..	..	..	35	..	74
23	....	6	9	9	..	..	..	24	..	47
125	71	18	44	42	2	..	..	106	..	231
18	2	7	11	4	..	..	..	22	..	40
101	38	26	58	14	..	..	..	98	..	199
33	....	6	19	4	..	..	..	29	..	62
0	....	5	6	3	..	..	..	14	..	23
3	....	1	2	....	..	..	..	3	..	6
7	....	12	4	3	..	..	..	19	..	26
9	....	5	5	2	..	..	..	12	..	21
130	....	51	52	16	..	..	..	119	..	249
13	....	3	4	4	1	..	..	12	..	25
20	10	....	3	2	..	..	..	5	1	25



Total.	CARTS.			Ploughs.	REMARKS.
	Large.	Small.	Total.		
29	30	31	32	33	34
12	....	....	....	....	
....	....	....	....	....	
....	....	....	....	....	
2	....	....	....	....	
4	....	1	1	....	
5	....	....	....	....	
34	2	5	7	....	
8	....	1	1	....	
5	....	....	....	....	
10	....	1	1	....	
2	....	....	....	....	
1	....	....	....	....	
7	....	....	....	....	
5	1	....	1	....	
....	....	....	....	....	
61	6	2	8	9	
15	5	....	5	5	
7	1	....	1	....	
186	1	6	7	21	
46	....	....	....	....	
8	1	....	1	....	
12	....	1	1	1	
....	....	....	....	....	
62,745	1,905	1,435	3,340	4,476	

P. A. ELPHINSTONE, Captain,  
Acting Superintendent of Revenue Survey and Assessment, Khandeish.

2 TALOOKA DOOLIA, KHANDEISH COLLECTORATE.

			CATTLE.						
Males and Females of which			Bullocks and He- Buffaloes.						
Have had the Small- Pox.	Have been Vaccinated.	Have not had Small- Pox nor have been Vaccinated.	Kept for agricul- tural pur- poses.	Kept for other pur- poses.	Cows and Calves.	She-Buffa- loes and their young.	Horses or Ponies and Mares and their young ones.	Asses and their young ones.	Sheep and Goats, &c
19	20	21	22	23	24	25	26	27	28
26	16	1	....	....	6	5	1	....	....
12	6	....	....	....	....	....	....	....	....
2	....	....	....	....	....	....	....	....	....
9	1	....	....	....	2	....	....	....	....
8	2	3	....	2	....	2	....	....	....
12	2	....	....	2	2	1	....	....	....
48	11	2	3	12	7	2	2	....	6
6	4	....	....	4	4	....	....	....	....
92	24	5	....	1	4	....	....	....	....
33	8	....	....	4	4	....	....	....	....
3	....	....	....	....	....	....	2	....	....
9	....	1	....	....	....	....	1	....	....
22	....	....	....	....	....	....	1	6	....
10	2	....	....	3	1	....	1	....	....
9	9	1	....	....	....	....	....	....	....
66	36	....	19	19	13	12	1	....	....
43	9	1	9	1	1	4	....	....	....
17	6	1	....	4	....	3	....	....	....
46	14	5	42	....	98	44	2	....	....
53	18	....	....	2	1	12	1	26	4
12	8	....	3	....	4	1	....	....	....
6	2	....	2	....	....	....	....	....	10
2	....	....	....	....	....	....	....	....	....
35,835	7,210	4,565	10,174	6,725	24,131	6,447	972	433	13,861

TABLE

*List of Government Villages referred*

Class.	Number of Villages.	Names of Villages.	According to the Old Rates			
			Average of past Collections in Cultivated Land for 44 years.		Land under Cultiva	
			Acres.	Collection in Rupees.	Acres.	Assessment in Rupees.
1	2	3	4	5	6	7
Class I.—Maximum rate Rs. 2-8-0.	1	Hingoné Koord .....	254	516	385	647
	2	Hingoné Sim .....	286	631	308	679
	3	Wudalé Wudalee .....	351	508	842	901
	4	Damroon .....	284	290	598	654
	5	Waglee .....	1,686	3,063	2,948	4,230
	6	Moondkheira Koord .....	184	276	342	472
	7	Moondkeira Boodrook ....	417	249	273	321
	8	Nhawee.....	407	292	482	364
	9	Oonadec .....	97	118	94	132
	10	Wudzur.....	386	463	480	513
	11	Kurjai .....	463	476	712	689
	12	Tulwaree Boodrook .....	451	304	635	436
	13	Bhorus Koord .....	111	100	355	324
	14	Kurgaum .....	333	234	920	663
	15	Tacklee (Pt. Chalisgaum)....	225	227	602	562

**E.***to in Paragraph 39 of Report.*

of Assessment.		According to the proposed Survey Rates.					
tion in 1861-62.		Roughly estimated result on the Cultivation of the year 1861-62.		Government Arable Land.			
Rate per Acre.	Collection in Rupees.	Survey Assessment	Rate per Acre.	Acres.	Survey Kumal.	Rate per Acre.	Nominal average value of Soil
8	9	10	11	12	13	14	15
Rs. a. p.			Rs. a. p.			Rs. a. p.	Rs. a. p.
1 10 11	645	634	1 10 4	427	702	1 10 4	0 10 6
2 3 3	679	578	1 14 0	371	674	1 13 1	0 11 11
1 1 1	880	974	1 2 6	1,199	1,342	1 1 11	0 7 4
1 1 6	638	576	0 15 5	1,248	1,228	0 15 9	0 6 1
1 6 11	4,191	4,336	1 7 6	5,833	7,034	1 3 4	0 9 4
1 6 1	470	550	1 9 9	450	718	1 9 6	0 10 3
1 2 10	321	348	1 4 5	888	870	0 15 8	0 8 2
0 12 1	345	370	0 12 3	1,899	1,300	0 10 11	0 4 11
1 6 6	132	142	1 8 2	275	318	1 2 6	0 9 8
1 1 1	511	662	1 6 1	1,072	1,194	1 1 10	0 8 10
0 15 6	689	808	1 2 2	1,190	1,174	0 15 9	0 7 3
0 11 0	424	484	0 12 2	2,631	1,660	0 10 1	0 4 10
0 14 7	307	322	0 14 6	1,037	860	0 13 3	0 5 10
0 11 6	651	718	0 12 6	3,442	2,342	0 10 11	0 5 0
0 14 11	562	918	1 8 5	1,320	1,762	1 5 4	0 9 9

Class.	Number of Villages.	Names of Villages	According to the Old Rates			
			Average of past Collections on Cultivated Land for 41 years.		Land under Cultiva	
			Acres.	Collection in Rupees.	Acres.	Assessment in Rupees.
1	2	3	4	5	6	7
CLASS I.—Maximum rate Rs. 2-8-0.	16	Chalisgaum .....	1,323	1,602	1,997	2,020
	17	Khurkee Koord .....	86	50	158	99
	18	Bilakheira .....	122	74	217	136
	19	Pathkurkee .....	65	63	155	147
	20	Kotegaum.....	99	86	143	128
	21	Waghroo .....	130	141	142	126
	22	Laigaum .....	711	1,028	1,206	1,699
	23	Borckheira Koord .....	169	164	332	268
	24	Patonda .....	1,222	2,055	2,092	2,581
	25	Mehon .....	947	891	1,417	1,304
	25	Villages.....	10,809	13,901	17,825	20,095
CLASS II.—Maximum rate Rs. 2-4-0.	1	Bhamer Koord .....	119	110	310	293
	2	Bhamer Boodrook .....	346	458	435	537
	3	Ekluharee.....	145	146	249	225
	4	Wakree.....	158	126	341	264
	5	Rokra .....	163	114	84	67
	6	Runjungaum.....	902	1,389	1,311	1,559

of Assessment.		According to the proposed Survey Rates.					
tion in 1861-62.		Roughly estimated result on the Cultivation of the year 1861-62.		Government Arable Land.			
Rate per Acre.	Collection in Rupees.	Survey Assessment.	Rate per Acre.	Acres.	Survey Kumal.	Rate per Acre.	Nominal average value of Soil
8	9	10	11	12	13	14	15
Rs. a. p.			Rs. a. p.			Rs. a. p.	Rs. a. p.
1 0 2	2,009	2,324	1 2 7	6,058	6,191	1 0 4	0 7 5
0 10 0	99	104	0 10 6	977	638	0 10 5	0 4 3
0 10 0	129	144	0 10 7	3,004	1,660	0 8 10	0 4 3
0 15 2	147	192	1 3 10	618	850	1 6 0	0 7 11
0 14 4	128	252	1 12 2	572	838	1 7 5	0 11 3
0 14 2	126	160	1 2 0	1,603	1,512	0 15 1	0 7 2
1 6 6	1,696	1,662	1 6 1	2,163	2,624	1 3 5	0 8 9
0 12 11	268	426	1 4 6	686	781	1 2 3	0 9 0
1 3 9	2,581	3,144	1 8 1	3,609	4,550	1 4 3	0 8 8
0 14 9	1,304	1,772	1 4 0	2,116	2,673	1 4 3	0 8 9
1 2 0	19,932	22,600	1 4 3	44,688	45,495	1 0 3	....
0 15 1	288	295	0 15 3	736	625	0 13 7	0 6 9
1 3 9	536	512	1 2 10	905	981	1 1 4	0 8 4
0 14 5	219	270	1 1 4	761	718	0 15 1	0 7 6
0 12 5	257	282	0 13 3	1,757	1,285	0 11 8	0 5 9
0 12 9	61	63	0 12 0	877	547	0 10 0	0 5 3
1 3 0	1,557	1,345	1 0 5	4,599	3,735	0 12 11	0 7 3



Class.	Number of Villages.	Names of Villages	According to the Old Rates			
			Average of past Collections on Cultivated Land for 14 years.		Land under Cultiva	
			Acres	Collection in Rupees	Acres.	Assessment in Rupees
1	2	3	4	5	6	7
Class II.—Maximum rate Rs 2-4-0.	7	Ruhipoootee .....	205	245	439	485
	8	Wungaum Lolch .....	415	468	1,293	1,165
	9	Dussegaum (Pr. Bhal).....	131	153	421	393
	10	Bhorus Boodhock .....	250	179	858	669
	11	Bhowut.....	280	352	439	515
	12	Dussegaum .....	271	342	227	142
	13	Nyahadongree .....	679	488	1,444	1,084
	14	Pilkhole .....	504	840	969	1,181
	15	Lamuswarec .....	110	118	179	213
	16	Wunkheira (Pr. Dhar) ....	18	11	135	90
	17	Pimpulwra Mhalsee .....	475	626	912	1,006
	18	Dewlee .....	421	492	833	846
	19	Chinchkheira .....	284	308	786	695
	20	Primpree Koord .....	122	84	674	488
	21	Sirpole .....	219	207	475	454
	22	Jamdha.....	390	477	1,061	975
	23	Bhuwallce.....	169	156	249	261

of Assessment.		According to the proposed Survey Rates.					
tion in 1861-62.		Roughly estimated result on the Cultivation of the year 1861-62.		Government Arable Land.			
Rate per Acre.	Collection in Rupees.	Survey Assessment.	Rate per Acre.	Acres.	Survey Kumal.	Rate per Acre.	Nominal average value of Soil
8	9	10	11	12	13	14	15
Rs. a. p.			Rs. a. p.			Rs. a. p.	Rs. a. p.
1 1 8	481	508	1 2 3	564	643	1 2 3	0 8 3
0 14 5	1,158	1,238	0 15 4	2,992	2,612	0 14 0	0 6 8
0 14 11	393	524	1 3 11	1,252	1,519	1 3 5	0 8 10
0 12 6	630	708	0 13 2	1,960	1,444	0 11 9	0 5 10
1 3 0	512	668	1 8 4	517	763	1 7 7	0 10 10
0 10 0	139	274	1 3 4	611	664	1 1 5	0 8 7
0 12 0	1,070	1,040	0 11 6	6,402	3,508	0 8 9	0 5 1
1 3 6	1,181	1,356	1 6 5	1,805	2,140	1 3 0	0 9 10
1 3 0	210	214	1 3 2	925	677	0 11 9	0 8 6
0 10 8	76	106	0 12 7	677	457	0 10 9	0 5 7
1 1 8	1,006	857	0 15 0	2,346	1,701	0 11 7	0 6 7
1 0 3	837	750	0 14 5	1,752	1,341	0 12 3	0 6 3
0 14 2	686	792	1 0 2	1,399	1,334	0 15 3	0 7 0
0 11 7	474	655	0 15 1	1,207	1,125	0 14 11	0 6 11
0 15 4	434	457	0 15 5	1,355	1,134	0 13 5	0 6 10
0 14 8	967	1,173	1 1 8	2,155	2,101	0 15 7	0 7 10
1 0 9	260	243	0 15 7	641	549	0 13 8	0 6 11

Class.	Number of Villages.	Names of Villages.	According to the Old Rates			
			Average of past Collections on Cultivated Land for 44 years.		Land under Cultiva	
			Acres.	Collection in Rupees.	Acres.	Assessment in Rupees.
1	2	3	4	5	6	7
Class II.—Maximum rate Rs. 2-4-0.	24	Chambhardec Koord .....	120	186	280	353
	25	Chambhardee Boodrook....	228	228	518	463
	26	Bhangaum .....	344	287	351	307
	27	Gunpoor .....	57	33	19	12
	28	Tambole Koord .....	82	56	204	157
	29	Tambole Boodrook .....	475	446	511	495
	30	Nimkheira .....	14	11	6	4
	31	Chitehgaum .....	80	59	303	239
	32	Daiwur .....	423	435	838	731
	33	Chinchgowhan .....	178	134	555	370
	34	Kundra .....	119	75	333	224
	35	Kurkee .....	466	351	812	602
	36	Pullasur .....	121	89	248	180
	37	Londa .....	322	260	654	574
	38	Argaum .....	239	266	465	413
	39	Brahmin Shewgee .....	229	135	638	399
	40	Mahal Shewgee .....	293	165	682	344

of Assessment.		According to the proposed Survey Rates.					
tion in 1861-62.		Roughly estimated result on the Cultivation of the year 1861-62.		Government Arable Land.			
Rate per Acre.	Collection in Rupees.	Survey Assessment.	Rate per Acre.	Acres.	Survey Kumal.	Rate per Acre.	Nominal average value of Soil
8	9	10	11	12	13	14	15
Rs. a. p.			Rs. a. p.			Rs. a. p.	Rs. a. p.
1 4 2	335	305	1 1 5	1,105	1,141	1 0 6	0 7 8
0 14 4	448	493	0 15 3	1,089	1,021	0 15 0	0 6 9
0 14 0	301	299	0 13 8	1,392	864	0 9 11	0 6 0
0 10 1	12	16	0 13 6	740	589	0 12 9	0 6 0
0 12 4	157	191	0 15 0	517	459	0 14 2	0 6 8
0 15 6	494	695	1 5 9	1,545	1,917	1 3 10	0 9 7
0 10 8	4	4	0 10 8	439	385	0 14 0	0 4 5
0 12 7	227	277	0 14 8	1,903	1,955	1 0 5	0 6 6
0 13 11	715	678	0 12 11	3,629	2,419	0 10 8	0 5 6
0 10 8	362	442	0 12 9	1,841	1,271	0 11 1	0 5 7
0 10 9	202	288	0 13 10	1,205	983	0 12 11	0 6 2
0 11 10	602	746	0 14 8	1,799	1,546	0 13 9	0 6 5
0 11 7	155	209	0 13 6	1,046	832	0 12 9	0 6 0
0 14 1	430	468	0 11 5	3,613	2,416	0 10 8	0 5 1
0 14 3	390	322	0 11 1	1,847	1,177	0 10 2	0 4 9
0 10 0	391	396	0 9 11	2,692	1,622	0 9 8	0 4 5
0 8 1	344	416	0 9 9	1,988	1,194	0 9 7	0 4 4

Class.	Number of Villages.	Names of Villages.	According to the Old Rates			
			Average of past Collections on Cultivated Land for 44 years.		Land under Cultiva	
			Acres.	Collection in Rupees.	Acres.	Assessment in Rupees.
1	2	3	4	5	6	7
CLASS II.—Maximum rate Rs. 2-4-0.	41	Shewree .....	35	23	88	72
	42	Andharec .....	235	176	220	219
	43	Tullegaum.....	376	297	920	703
	44	Lacklee.....	598	650	920	904
	44	Villages.....	11,840	12,251	23,689	21,372
CLASS III.—Maximum rate Rs. 2-0-0.	1	Madoorna .....	236	154	368	258
	2	Amode .....	354	333	618	592
	3	Nandra .....	105	105	174	198
	4	Alwaree .....	175	142	322	271
	5	Deshmookwaree .....	127	124	303	242
	6	Oopkheira.....	544	495	796	711
	7	Wurkheira .....	313	355	586	541
	8	Dhamungaum .....	334	234	582	422
	9	Sidwaree .....	256	173	608	419
	10	Jowla .....	92	129	179	196
	11	Wagla .....	82	93	144	135
	12	Pimpree Boodrook .....	128	104	244	207

of Assessment.		According to the proposed Survey Rates.					
tion in 1861-62.		Roughly estimated result on the Cultivation of the year 1861-62.		Government Arable Land.			
Rate per Acre.	Collection in Rupees.	Survey Assessment.	Rate per Acre.	Acres.	Survey Kumal.	Rate per Acre.	Nominal average value of Soil
8	9	10	11	12	13	14	15
Rs. a. p.			Rs. a. p.			Rs. a. p.	Rs. a. p.
0 13 1	63	45	0 8 2	2,310	1,134	0 7 10	0 3 7
0 15 11	219	168	0 12 3	1,575	974	0 9 11	0 5 4
0 12 3	685	844	0 14 8	5,347	4,074	0 12 2	0 6 6
0 15 9	900	785	0 13 8	2,292	1,541	0 10 9	0 5 9
0 14 5	20,868	22,417	0 15 2	78,109	61,117	0 12 6	....
0 11 3	255	212	0 9 3	2,350	1,126	0 7 8	0 4 6
0 15 4	589	526	0 13 7	1,228	862	0 11 3	0 6 9
1 2 2	198	144	0 13 3	790	502	0 10 2	0 6 6
0 13 6	271	276	0 13 9	1,487	1,107	0 11 11	0 6 10
0 12 9	242	262	0 13 10	1,091	898	0 13 2	0 6 11
0 14 3	708	700	0 14 1	4,234	2,656	0 10 0	0 6 11
0 14 9	521	498	0 13 7	1,713	1,258	0 11 9	0 6 9
0 11 7	403	370	0 10 2	1,605	960	0 9 7	0 5 1
0 11 0	419	418	0 11 0	2,290	1,450	0 10 2	0 5 6
1 1 6	196	160	0 14 4	494	374	0 12 1	0 7 2
0 15 0	133	112	0 12 5	632	398	0 10 1	0 6 3
0 13 7	207	236	0 15 6	1,110	960	0 13 10	0 7 9

Class.	Number of Villages.	Names of Villages.	According to the Old Rates			
			Average of past Collections on Cultivated Land for 44 years.		Land under Cultiva	
			Acres.	Collection in Rupees.	Acres.	Assessment in Rupees.
1	2	3	4	5	6	7
Class III.—Maximum rate Rs. 2-0-0.	13	Guneshpoor .....	223	272	336	379
	14	Kurrunjgaum .....	235	194	462	392
	15	Pimpulgaum.....	130	85	439	275
	16	Rohinee .....	356	237	1,048	714
	17	Hatgaum .....	265	213	450	371
	18	Tumgowhan .....	201	156	300	258
	19	Birole .....	34	14	43	21
	20	Runkheira.....	7	2	....	....
	21	Chandhare .....	136	109	116	106
	22	Pimpurkheira .....	326	326	493	455
	23	Nusrutpoor .....	175	107	459	287
	24	Purdharee.....	361	212	1,037	596
	25	Pimpree Hawailee .....	284	154	669	405
	26	Hingone (Pr. Dhar).....	91	54	201	126
	27	Durregaum .....	354	282	754	520
	28	Kakuma .....	41	32	107	95
	29	Pimpulwar Nikoombe ....	166	128	304	266

of Assessment.		According to the proposed Survey Rates.					
tion in 1861-62.		Roughly estimated result on the Cultivation of the year 1861-62.		Government Arable Land.			
Rate per Acre.	Collection in Rupees.	Survey Assessment.	Rate per Acre.	Acres.	Survey Kumal.	Rate per Acre.	Nominal average value of Soil
8	9	10	11	12	13	14	15
Rs. a. p.			Rs. a. p.			Rs. a. p.	Rs. a. p.
1 2 0	368	314	0 14 11	1,033	874	0 13 6	0 7 3
0 13 7	363	332	0 11 6	1,905	1,248	0 10 6	0 5 9
0 10 0	267	210	0 7 8	1,133	530	0 7 6	0 3 10
0 10 11	707	666	0 10 2	1,558	936	0 9 7	0 5 1
0 13 2	354	272	0 9 9	2,453	1,360	0 8 10	0 4 10
0 13 9	253	250	0 13 4	1,349	995	0 11 10	0 6 8
0 7 10	20	24	0 8 11	1,601	702	0 7 0	0 4 4
....	....	....	....	1,064	360	0 5 5	....
0 14 7	106	90	0 12 5	1,275	966	0 12 1	0 6 3
0 14 9	451	332	0 10 9	3,228	1,638	0 8 1	0 5 3
0 10 0	284	278	0 9 8	1,575	826	0 8 5	0 4 10
0 9 2	584	542	0 8 4	3,015	1,328	0 7 1	0 4 2
0 9 8	395	348	0 8 4	2,391	1,130	0 7 7	0 4 0
0 10 0	120	252	1 4 1	577	707	1 3 7	0 10 0
0 11 0	510	620	0 13 2	2,273	1,678	0 11 10	0 6 7
0 14 2	95	90	0 13 5	916	659	0 11 6	0 6 8
0 14 0	266	256	0 13 6	1,557	1,154	0 11 10	0 6 9



Class.	Number of Villages.	Names of Villages.	According to the Old Rates			
			Average of past Collections on Cultivated Land for 44 years.		Land under Cultiva	
			Acres.	Collection in Rupees.	Acres.	Assessment in Rupees.
1	2	3	4	5	6	7
	30	Seemgaum .....	55	30	315	404
	31	Mungulna .....	80	60	125	107
	31	Villages.....	6,266	5,113	12,583	9,969
Class IV.—Maximum rate Rs. 1-12-0.	1	Malpoor .....	21	9	....	....
	2	Dhaikoo Koord .....	117	50	239	103
	3	Dhaikoo Boodrook .....	115	59	171	88
	4	Sakegaum .....	409	495	424	480
	5	Boltan .....	955	1,273	1,341	1,737
	6	Rohilla .....	190	160	142	186
	7	Hingne (Pr. Kunnur) .....	209	227	402	467
	8	Pokree .....	407	487	351	508
	9	Kheerdee .....	208	259	228	299
	10	Vittulpoor.....	20	6	28	12
	11	Malligaum .....	739	947	714	935
	12	Nursipoor .....	41	22	....	....
	13	Pullusgaum .....	45	19	4	4
	14	Mukrunpoor .....	50	98	151	189

of Assessment.		According to the proposed Survey Rates.					
tion in 1861-62.		Roughly estimated result on the Cultivation of the year 1861-62.		Government Arable Land.			
Rate per Acre.	Collection in Rupees.	Survey Assessment.	Rate per Acre.	Acres.	Survey Kumal.	Rate per Acre.	Nominal average value of Soil
8	9	10	11	12	13	14	15
Rs. a. p.			Rs. a. p.			Rs. a. p.	Rs. a. p.
1 4 6	404	150	0 7 7	1,060	459	0 6 11	0 3 10
1 13 8	94	88	0 11 3	517	397	0 9 6	0 5 8
0 12 8	9,783	9,028	0 11 6	49,504	30,408	0 9 10	....
....	....	....	....	331	170	0 8 3	....
0 6 11	103	128	0 8 7	1,575	686	0 7 0	0 4 11
0 8 3	85	119	0 11 2	1,418	675	0 7 7	0 6 4
1 2 1	476	414	0 15 7	2,369	2,207	0 14 11	0 8 10
1 4 9	1,728	1,624	1 3 5	2,826	3,146	1 1 10	0 11 0
1 4 11	177	173	1 3 6	831	871	1 0 9	0 10 10
1 2 7	467	439	1 1 6	577	619	1 1 2	0 10 0
1 7 2	506	368	1 0 9	2,101	1,752	0 13 4	0 8 9
1 5 0	299	260	1 2 3	876	731	0 13 4	0 10 4
0 6 10	12	21	0 12 0	628	275	0 7 0	0 7 1
1 4 11	912	992	1 6 3	1,713	1,787	1 0 8	0 12 8
....	....	....	....	559	245	0 7 0	....
1 0 0	4	3	0 12 0	657	387	0 9 5	0 7 1
1 4 0	189	162	1 1 2	554	394	0 11 5	0 8 2

Class.	Number of Villages.	Names of Villages.	According to the Old Rates			
			Average of past Collections on Cultivated Land for 44 years.		Land under Cultiva	
			Acres.	Collection in Rupees.	Acres.	Assessment in Rupees.
1	2	3	4	5	6	7
Class IV.—Maximum rate Rs. 1-12-0.	15	Julgaum .....	311	319	497	487
	16	Koosombtail.....	33	15	20	12
	17	Wehelgaum .....	625	602	1,385	1,272
	18	Pulasee .....	299	288	345	378
	19	Sawurgaum .....	209	149	401	298
	20	Lulwara .....	380	388	512	420
	21	Mooldongree.....	143	96	226	130
	22	Kurda .....	66	54	87	68
	23	Sangwee .....	71	60	67	57
	24	Sindee .....	125	96	224	168
	25	Ghoregaum .....	69	43	242	169
	26	Wurtan .....	109	63	89	57
	26	Villages.....	5,966	6,284	8,290	8,524
	1	Kuradee .....	6	2	....	....
	2	Bodre .....	97	27	....	....
	3	Wudre .....	207	114	464	268
	4	Chinchwihire.....	101	39	91	31
	4	Villages.....	411	182	555	299
130		Villages.....	35,292	37,731	62,952	60,259

of Assessment.		According to the proposed Survey Rates.					
tion in 1861-62.		Roughly estimated result on the Cultivation of the year 1861-62.		Government Arable Land.			
Rate per Acre.	Collection in Rupees.	Survey Assessment.	Rate per Acre.	Acres.	Survey Kumal.	Rate per Acre.	Nominal average value of Soil
8	9	10	11	12	13	14	15
Rs. a. p.			Rs. a. p.			Rs. a. p.	Rs. a. p.
0 15 8	487	459	0 14 9	1,355	1,351	0 15 11	0 8 5
0 9 7	12	5	0 4 0	1,398	402	0 4 7	0 2 8
0 14 8	1,271	719	0 8 4	2,338	1,132	0 7 9	0 4 9
1 1 6	378	226	0 10 6	1,277	723	0 9 1	0 6 0
0 11 11	283	205	0 8 2	1,301	81	0 8 5	0 4 8
0 13 1	419	275	0 8 7	1,286	612	0 7 7	0 4 11
0 9 2	127	96	0 6 10	1,187	455	0 6 2	0 3 11
0 12 6	68	59	0 10 10	1,256	763	0 9 10	0 6 2
0 13 7	56	44	0 10 6	1,377	763	0 8 10	0 5 11
0 12 0	158	159	0 11 4	2,022	1,146	0 9 1	0 6 6
0 11 2	144	135	0 8 11	1,403	707	0 8 1	0 5 1
0 10 3	57	56	0 10 1	1,852	1,239	0 10 8	0 5 9
1 0 5	8,418	7,141	0 13 9	35,067	23,919	0 10 11	....
....	....	....	....	1,180	411	0 5 7	....
....	....	....	....	3,499	1,474	0 6 7	....
0 9 3	255	275	0 9 6	2,150	910	0 6 9	0 5 10
0 5 4	31	29	0 5 1	1,692	565	0 5 4	0 3 3
0 8 7	286	304	0 8 9	8,521	3,360	0 6 4	....
0 15 4	59,287	61,490	0 15 8	215,889	164,299	0 12 2	....

P. A. ELPHINSTONE, Captain,  
Acting Supt. Revenue Survey and Assessment, Khandeish.

TABLE F.

*Item of Revenue hitherto derived from Land of every description, whether Government has been obtained from the Records and prepared according to the*

Order of Land actually cultivated (Ann 6).	Remissions on Land actually cultivated given in year of Jumabundee.	Remaining Net Revenue for Collections from Lands actually cultivated.	GOVERNMENT WASTE AND OTHER LANDS.				GOVERNMENT LAND CULTIVATED AND WASTE.
			Waste Lands. A	Melon Beds and other Lands. B	Proceeds of Taxes formerly levied but now abolished. C	Total Net Revenue for Collections.	Total Net Revenue for Collections, being sum of Columns 11 and 15.
9	10	11	12	13	14	15	16
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
0,886	....	30,886	304	3	559	866	31,752
1,596	....	31,596	44	39	2,377	2,460	34,056
3,122	21	33,101	72	35	2,535	2,642	35,743
6,536	2,588	33,948	....	22	....	22	33,970
8,722	....	28,722	29	76	4	109	28,831
8,088	....	28,088	224	39	1,009	1,272	29,360
1,301	13,965	17,336	....	26	....	26	17,362
5,438	2,305	33,133	197	141	17	355	33,488
8,979	2,899	31,080	21	388	32	441	31,521
5,180	2,000	33,180	134	348	50	532	33,712
4,448	3,302	31,146	63	94	69	226	31,372
2,358	4,712	27,646	36	128	45	209	27,855
6,884	1,280	35,604	150	10	140	300	35,904
5,898	8,012	27,886	104	23	141	268	28,154
1,706	10,986	20,720	174	33	104	311	21,031
6,992	313	36,679	66	626	134	826	37,505
7,107	3,077	34,030	287	93	254	634	34,664
7,228	835	36,393	7	26	144	177	36,570
5,668	1,139	34,529	344	133	143	620	35,149

# DETAILED FIGURED STATEMENT *exhibiting the Source and Amount of every*

OFFICIAL YEAR.	Total Number of Villages.	GOVERNMENT LAND IN CULTIVATION.						
		Cultivated Villages.	Total Acres.	Deduct Land left un- cultivated.	Remainder of Land actually cultivated.	Assessment of Total Acres under cultivation (Column 4).	Deduct Assessment of Land left uncultivated (Column 5).	Rem of Land cult (Col
1	2	3	4	5	6	7	8	
			Acres.	Acres.	Acres.	Rs.	Rs.	
1818-19..	132	64	14,464	....	14,464	30,886	....	
1819-20..	126	66	13,491	....	13,491	31,596	....	
1820-21..	126	69	14,927	....	14,927	33,122	....	
1821-22..	126	70	16,075	....	16,075	36,536	....	
1822-23..	126	70	14,369	....	14,369	28,722	....	
1823-24..	126	74	14,705	86	14,619	28,218	130	
1824-25..	126	76	17,388	324	17,064	31,881	580	
1825-26..	126	78	20,258	3	20,255	35,445	7	
1826-27..	126	86	21,407	582	20,825	34,622	643	
1827-28..	126	91	22,183	334	21,849	35,572	392	
1828-29..	126	109	23,701	293	23,408	34,787	339	
1829-30..	126	116	25,273	3,493	21,780	36,790	4,432	
1830-31..	132	123	26,704	362	26,342	37,297	413	
1831-32..	132	123	26,470	916	25,554	36,975	1,077	
1832-33..	132	120	25,198	4,313	20,885	36,587	4,881	
1833-34..	132	118	25,310	72	25,238	37,056	64	
1834-35..	138	124	25,820	141	25,679	37,288	181	
1835-36..	138	124	27,897	7	27,890	37,236	8	
1836-37..	138	125	30,392	582	29,810	36,305	637	



Numbers.	NAMES OF VILLAGES.					
		Cultivators.	Employed as Marathi Clerks.	Koostee or Weavers.	Dookandars and Sowcars or Shop- keepers.	Sonar or Gold- smiths.
1	2	3	4	5	6	7
63	Tirpole .....	46	....	..	17	..
64	Dewlee .....	231	13	57	41	32
65	Mehoon .....	328	65	63	63	29
66	Bangaum .....	73	....	..	6	..
67	Khurkee (B) .....	124	....	..	7	..
68	Bhowur .....	137	2	..	....	..
69	Chinchkheira .....	105	....	..	....	..
70	Guneshpoor .....	153	26	..	1	1
71	Tackee (pr. Darce) .....	264	....	..	12	9
72	Ranjungaum .....	301	80	43	128	38
73	Sidwaree .....	29	....	..	....	..
74	Bilakheira .....	43	....	..	....	..
75	Pokhree .....	106	....	..	....	..
76	Dhatkoo (B) .....	11	....	..	....	..
77	Tacklee .....	48	....	..	....	..
78	Sakegaum .....	76	4	..	4	5
79	Nandra .....	30	....	..	....	..
80	Sangwee .....	....	....	..	....	..
81	Sindee .....	4	....	..	....	..
82	Wodre .....	83	....	11	....	..
83	Hingvee .....	92	....	..	1	..
84	Tamuswaree .....	17	....	..	....	..
85	Lambolce (K) .....	17	....	..	....	..
86	Mandoorne .....	106	....	..	....	..
87	Kotegaum .....	45	....	..	....	..
88	Nyahadongree .....	263	8	53	48	3
89	Tallegaum .....	166	....	..	1	21
90	Malligaum .....	160	8	96	19	6
91	Alwaree .....	28	....	..	....	..
92	Kurrunjgaum .....	181	....	..	....	..
93	Waghroo .....	34	....	..	....	..



**TABLE G.**

*STATEMENT showing the TRADES and PROFESSIONS in*

## TRADES AND PROFESSIONS IN

Sootars or Carpen- ters.	Lohars or Smiths.	Shimpee or Tailors.	Kussar or Bangle- sellers.	Nahvecs or Barbers.	Beldars or Stone- cutters and Masons.	Tambukurs or Coppersmiths and Tinnmen.	Goorow or Musi- cians.	Thelee or Oilmen.	Kussai or Butchers.	Thumboolee or Betel-sellers.	Kolatee or Prost- itutes.
8	9	10	11	12	13	14	15	16	17	18	19
22	24	87	23	35	45	4	19	97	47	17	10
11	27	12	5	5	8	....	3	5	..	7	....
..	..	..	..	..	5	....	....	1	..	..	....
..	..	..	..	15	..	....	....	..	..	..	....
4	..	..	..	..	..	....	....	..	..	..	....
15	..	5	..	14	..	....	....	..	..	..	....
12	2	..	..	..	..	....	....	..	..	..	....
..	..	..	..	3	..	....	....	..	..	..	....
..	..	..	..	..	..	....	....	..	..	..	....
14	..	..	..	5	..	....	....	15	..	..	....
..	..	..	..	..	..	....	....	..	..	..	....
..	..	..	..	..	..	....	....	..	..	..	....
..	..	..	..	..	10	....	....	..	..	..	....
4	..	..	..	..	..	....	....	..	..	..	....
..	..	..	..	..	..	....	....	..	..	..	....
..	..	..	..	..	..	....	....	..	..	..	....
..	..	..	..	..	10	....	....	..	..	..	....
5	..	..	..	2	..	....	....	..	..	..	....
..	..	..	..	..	8	....	....	..	..	..	....
..	..	9	10	3	..	....	....	..	..	..	....
7	4	7	..	8	..	....	....	..	..	..	....
..	..	..	..	..	..	....	....	..	..	..	....
..	..	..	..	..	..	....	....	..	..	..	....
..	12	..	..	..	..	....	....	..	..	..	....

HOUSES.				CASTE.			
Kind.					Males.		
Tiled.	Flat Roofed.	Thatched.	TOTAL.		Below 15 years old.	Above 15 years old.	
1	2	3	4	5	6	7	
..	278	8	286	Brahmins.....	219	325	
..	2,003	110	2,113	Coonbee .....	2,157	2,707	
..	209	11	220	Mallee .....	230	305	
..	233	5	238	Rajpooth.....	248	340	
..	146	15	161	Coollee .....	171	201	
..	37	..	37	Goozer.....	32	58	
..	18	..	18	Goluk .....	23	18	
..	241	3	244	Ladshakce Wance .....	192	255	
..	11	1	12	Goorow .....	11	19	
..	43	6	49	Baledar .....	43	74	
..	67	2	69	Sootar .....	72	91	
..	51	1	52	Lohar .....	57	72	
..	21	5	26	Bhoree.....	30	24	
..	328	290	618	Wunjaree .....	538	776	
..	54	26	80	Purdasee .....	62	108	
..	436	258	694	Mahar .....	689	927	
..	11	..	11	Mahan-Bhow .....	14	14	
..	43	400	443	Bheel .....	449	516	
..	98	30	128	Chambhar .....	136	157	
..	5	74	79	Mang .....	80	94	
..	35	2	37	Dhoobie .....	46	54	
..	78	2	80	Navee .....	92	122	
..	25	1	26	Kassar .....	24	27	
..	27	13	40	Goosavce.....	31	50	
..	13	38	51	Tirmullee.....	50	72	
..	152	1	153	Marwadee .....	51	121	
..	94	2	96	Sonar .....	116	158	
..	112	1	113	Simpee.....	113	167	
..	17	6	23	Bairagee .....	11	33	
..	1	..	1	Kan-phata .....	2	2	
..	373	165	538	Mussulmans .....	555	752	
..	93	4	97	Dungur .....	168	148	

**TABLE H.**

**STATISTICAL RETURN of HOUSES, INHABITANTS, and CATTLE**

**INHABITANTS.**

TOTAL.	Can read or are learning.	Females.								
		Below 15 years old.	Married.	Mother or other relative whose husband is away.	Kept.	Servant.	Not Relatives.	TOTAL.	Can read or are learning.	Total Columns 8 and 16.
8	9	10	11	12	13	14	15	16	17	18
544	342	112	256	98	..	3	..	469	..	1,013
4,864	85	1,314	2,484	596	2	2	..	4,400	..	9,264
535	1	137	280	43	1	1	..	462	..	997
588	24	188	274	80	2	..	..	544	..	1,132
372	2	135	181	48	2	..	..	366	..	738
90	1	27	51	11	..	..	..	89	..	179
41	11	15	18	8	..	..	..	41	..	82
447	119	114	212	62	9	..	..	389	..	836
30	2	3	15	2	..	..	..	20	..	50
117	1	27	62	13	..	..	..	102	..	219
163	4	33	84	7	..	..	..	124	..	287
129	....	33	60	12	..	..	..	105	..	234
54	....	27	25	8	..	..	..	60	..	114
1,314	1	426	620	143	..	..	..	1,189	..	2,503
170	7	38	80	40	1	..	..	159	..	329
1,616	1	454	890	182	3	..	..	1,529	..	3,145
28	....	8	13	4	..	..	..	25	..	53
965	8	377	479	96	3	..	..	955	..	1,920
293	1	92	158	25	..	..	..	275	..	568
174	....	58	95	24	1	..	..	178	..	352
100	....	27	51	13	..	..	..	91	..	191
214	1	67	105	17	1	..	..	190	..	404
51	3	9	25	5	..	..	..	39	..	90
81	3	20	30	11	3	..	..	64	..	145
122	....	50	64	13	..	..	..	127	..	249
172	87	45	65	21	3	..	..	134	..	306
274	30	54	153	27	..	..	..	234	..	508
280	58	87	158	36	..	..	1	282	..	562
44	1	14	21	3	..	..	..	38	..	82
4	....	....	2	2	..	..	..	4	..	8
1,307	15	439	571	192	3	..	..	1,205	..	2,512
316	....	102	165	35	..	..	..	302	..	618



Total.	CARTS.			Ploughs.	REMARKS.
	Large.	Small.	Total.		
29	30	31	32	33	34
34	2	....	2	1	
141	9	....	9	6	
73	8	....	8	12	
935	62	18	80	126	
212	3	....	3	....	
11	....	....	....	2	
98	3	....	3	5	
11	....	....	....	1	
292	5	1	6	17	
30	....	....	....	....	
6	1	....	1	....	
10	....	....	....	....	
6	2	....	2	....	
1	....	....	....	....	
17	....	....	....	1	
299	7	....	7	12	
2	....	....	....	....	
691	2	1	3	9	
1	....	....	....	....	
47	3	....	3	2	
5	....	....	....	1	
115	4	....	4	5	
26	4	....	4	5	
64	1	....	1	1	
163	9	....	9	21	
32	....	....	....	....	
3	....	....	....	1	
0,075	1,277	429	1,706	3,704	

P. A. ELPHINSTONE, Captain,  
Acting Superintendent of Revenue Survey and Assessment, Khandeish.

in TALOOKA CHALISGAUM, KHANDAISHT COLLECTORATE.

Males and Females of which			CATTLE.						
			Bullocks and He- Buffaloes.		Cows and Calves.	She-Buffa- loes and their young ones.	Horses or Ponies and Mares and their young ones.	Asses and their young ones.	Sheep and Goats, &c.
Have had the Small- Pox.	Have been Vaccinated.	Have not had Small- Pox nor have been Vaccinated.	Kept for agricul- tural pur- poses.	Kept for other pur- poses.					
19	20	21	22	23	24	25	26	27	28
878	37	98	201	63	586	118	95	....	0
7,708	372	1,184	4,456	330	6,846	2,143	235	....	1,282
828	19	150	437	117	493	149	6	....	67
942	46	144	549	36	977	313	42	....	197
621	34	83	148	12	201	52	2	....	560
157	13	9	102	6	110	55	1	....	2
69	1	12	20	....	39	23	5	....	34
693	50	93	200	54	468	115	54	....	5
47	....	3	6	2	7	4	3	....	1
203	5	10	21	16	10	18	2	....	1
237	11	39	39	34	137	46	9	....	1
191	15	28	35	17	55	44	9	....	11
97	2	15	11	5	17	3	....	45	2
2,052	151	300	758	2,132	3,723	345	85	....	1,200
280	11	38	147	10	221	102	11	....	9
2,657	80	408	387	35	576	67	54	....	1,38
43	2	8	....	35	33	9	7	....	....
1,566	76	278	223	12	320	12	29	....	1,26
485	5	78	39	18	171	71	9	....	9
300	3	49	20	20	35	8	14	....	21
160	8	23	31	4	68	21	13	32	15
336	11	57	58	9	141	62	6	....	8
74	3	13	15	17	33	7	1	....	....
127	2	16	28	3	137	31	25	....	11
184	31	34	47	12	108	22	8	....	4
266	9	31	79	104	349	96	44	....	....
425	29	54	108	13	143	69	17	....	1
471	17	74	83	46	117	81	39	....	1
64	4	14	6	1	36	24	6	....	1
7	....	1	4	....	6	....	....	....	....
165	72	275	388	142	551	231	93	....	1,05
2,521	46	51	96	14	159	32	8	....	4,46

CARTS.				Ploughs.	REMARKS.						
Total.	Large.	Small.	Total.								
29	30	31	32	33	34						
1	29	6	6	17	1	..	..	..	24	..	53
	152	3	45	87	27	..	..	..	159	..	311
9	54	6	10	25	2	..	..	..	37	..	91
2	382	5	92	227	47	..	2	..	368	..	750
	85	....	31	51	13	..	..	..	95	..	180
	4	....	3	5	2	..	..	..	10	..	14
	48	7	13	22	5	..	..	..	40	..	88
2	17	....	4	7	1	..	..	..	12	..	29
	77	7	31	41	12	..	..	..	84	..	161
	31	6	16	18	4	..	..	..	38	..	69
	5	....	2	3	1	1	..	..	7	..	12
	6	....	3	6	....	..	..	..	9	..	15
	4	4	1	1	1	..	..	..	3	..	7
4	11	....	4	6	1	..	..	..	11	..	22
2	1	....	....	....	1	..	..	..	1	..	2
	78	1	28	43	7	..	..	..	78	..	156
6	2	....	3	....	6	..	..	..	9	..	11
	46	....	16	24	5	..	..	..	45	..	91
	5	....	1	3	1	..	..	..	5	..	10
	35	5	6	20	1	..	..	..	27	..	62
	4	1	....	2	1	..	..	..	3	..	7
	45	....	14	20	9	..	..	..	43	..	88
	18	....	3	11	2	..	..	..	16	..	34
1	19	....	6	10	3	..	..	..	19	..	38
	36	....	11	14	8	..	..	..	33	..	69
	13	....	9	6	1	..	..	..	16	..	29
	2	1	2	1	....	..	..	..	3	..	5
0,0	16,708	860	4,892	8,417	2,039	27	8	3	15,386	..	32,094

in TALOOKA CHALISGAUM, KHANDAISII COLLECTORATE.

Males and Females of which			CATTLE.						
			Bullocks and He- Buffaloes.		Cows and Calves.	She-Buffa- loes and their young ones.	Horses or Ponies and Mares and their young ones.	Asses and their young ones.	Sheep and Goats, &c.
Have had the Small- Pox.	Have been Vaccinated.	Have not had Small- Pox nor have been Vaccinated.	Kept for agricul- tural pur- poses.	Kept for other pur- poses.					
19	20	21	22	23	24	25	26	27	28
44	....	9	2	1	17	3	1	....	1
286	3	22	20	11	73	34	3	....	....
65	15	11	25	5	32	9	2	....	....
665	13	72	291	91	291	242	5	....	1
153	7	20	2	6	57	31	7	99	1
14	....	....	3	....	5	1	2	....	1
75	....	13	17	23	38	1	13	....	....
22	....	7	3	5	....	2	1	....	....
134	8	19	38	3	158	22	13	....	....
53	6	10	2	7	5	5	4	....	....
10	....	2	....	5	1	....	....	....	....
13	1	1	....	1	2	7	....	....	....
6	....	1	....	3	3	....	....	....	....
22	....	....	....	....	1	....	....	....	....
2	....	....	1	....	10	3	....	....	....
135	....	21	27	6	64	5	1	....	19
9	....	2	....	....	....	....	....	2	....
70	6	15	22	7	60	15	5	....	58
7	....	3	....	....	....	1	....	....	....
58	1	3	9	8	11	10	9	....	....
7	....	....	2	....	2	....	1	....	....
76	1	11	12	....	13	3	....	....	8
30	....	4	12	....	9	4	....	....	....
31	....	7	5	2	36	4	2	....	1
58	....	11	42	....	81	39	1	....	....
25	....	4	....	1	....	19	....	....	....
5	....	....	2	....	....	....	....	....	....
26,929	1,226	3,938	9,270	3,504	17,848	4,833	1,002	178	13,4



No. 72 of 1863.

### MEMORANDUM.

The Superintendent of Revenue Survey in Khandeish in forwarding this report, containing revised rates prepared by Captain Elphinstone, will as briefly as possible add his opinion, the subject of the applicability of the proposed rates having already been discussed between the Revenue Commissioner, the Collector, and the Acting Superintendent.

2. Captain Elphinstone has minutely and carefully taken into consideration in both talookas the various circumstances affecting each respective village, and has formed the groups accordingly. The formation of the groups seem to the Superintendent to be correct.

3. The effect of the proposed rates in both talookas is that of equalising the assessment, maintaining the former amount of realisations. Under present circumstances (with the very high rates of prices for every description of produce) there may still be an increase in the revenue; but from the very poor nature of a large portion of the land in both talookas, more particularly so in Dhoolia, the Superintendent does not anticipate the introduction of the proposed rates will be followed by any great increase in cultivation (except where there is good soil still available in Chalisgaum), as was the case in previously revised districts. It will be perceived by statements A and E that in Dhoolia talooka the arable acres amount to 188,992, whereas the cultivation of last year was only 59,454; and in Chalisgaum the arable area is 215,889, and actual cultivation of last season 62,952, giving only a little over one-third as cultivated. It might have been advisable therefore, with the view of offering greater inducement towards bringing the waste lands under cultivation, to have pitched the rates somewhat lower in the second and third classes for the less favourably situated villages of the Dhoolia talooka.

4. Allowing full weight to the remarks of the Revenue Commissioner in recommending modification in the scale of rates proposed by Captain Elphinstone for adoption in the northern portion of Dhoolia

into which revised rates were introduced last year, notwithstanding the improved facility of communication by railway to the coast, and the high standard of the present prices for agricultural produce, the Superintendent hardly expects that any expansion in the revenue will take place in the villages where the land is poor and water scarce (such as is the case in many parts of the Dhoolia talooka) unless under a light assessment. Proceeding from Kheir northwards cultivation ceases from about two miles from the river; the country then becomes rocky and barren, and with exception of small patches of cultivation immediately in the vicinity of the villages for miles, there is hardly a speck of cultivation visible. It has often struck the Superintendent as surprising that the few inhabitants do not leave that part of the collectorate altogether and move over to the more fertile lands. The people, however, possess a strong feeling for their native villages, as well as a dislike to throw up their family wuttuns, and thus you see them dragging out a bare existence in a barren, unfertile part of the country. The important fact of the railway passing through the Chalisgaum talooka must have an increasing influence over the district for years to come, and over the best soils the Superintendent expects to see an extension of cultivation under the rates proposed which seem to him to be very applicable.

5. The Superintendent would, however, here offer a few remarks on the position of the southern portion of the Khandeish collectorate, of which the Chalisgaum talooka forms a portion, and which has not been noticed by Captain Elphinstone. Major Wingate in his report on Khandeish (No. 97, dated 29th March 1852), in paragraph 4, writes as follows:—"The fall of rain throughout Khandeish is probably less than in the Southern Maratha Country and little, if at all, greater than in the Deccan, while the rocks and the soils are exactly similar to those of the latter province, though the harder varieties of trap are much more sparingly distributed in Khandeish than in the Deccan. Notwithstanding, however, these resemblances, the soil of Khandeish is more fertile and yields heavier crops than either the Deccan or Southern Maratha Country, which apparently is owing to some unexplained peculiarity of climate, and to the soil being less exhausted by long-continued cultivation. This su-

perior fertility, however, does not affect the relative fertility of the several varieties of soil amongst themselves. The principal crops of Khandeish are also those of the Deccan and Southern Maratha Country, and the modes of husbandry do not materially differ, on which account the plan for estimating the relative values of different kinds of soil followed on the surveys of those provinces will be in all respects applicable to Khandeish."

6. This unexplained peculiarity of climate has, in the opinion of the Superintendent, less influence in the talookas of Chalisgaum and Malligaum than in those in the valley of the Taptee. The superior fertility of the soils perceptible in the lands of this portion of the collectorate cannot be said to be observable in Chalisgaum. Although the soils may in places be similar in colour and even in depth, yet there is a marked difference in their productive power. The yield of the superior descriptions of produce is not only much less, but from the small quantities grown leads to the inference that the climate and soil are unsuitable to their growth. The following table will exhibit this, perhaps, more clearly :—

Crop.	Errundole.	Nusseerabad.	Nundoorbar.	Dhoolia.	Chalisgaum.
Bajree .....	23	8	22	49	40
Jowaree .....	18	31	1	8	16
Wheat .....	15	17	27	1	3
Cotton .....	13	17	6	11	9
Linseed .....	12	14	13	2	6
Gram .....	7	4	7	1	3
Tillee .....	6	6	10	17	12
Other grains .....	6	3	14	11	11
Total....	100	100	100	100	100

It will be observed that the extent of cotton, linseed, wheat, and gram grown in Chalisgaum and Dhoolia, contrasted with that produced in Errundole, Nusseerabad, and Nundoorbar, bear but a small percentage. Bajree it will be seen is the principal crop. The produce of both talookas may be said to be almost entirely confined

to the "khureef" crops. The wheat and linseed raised in Chalisgaum is chiefly grown on the table-land above the ghauts. The peculiarity of the soils of the Taptee valley, as the Superintendent has remarked in former reports, are in his opinion attributable in a great measure to the sub-soil being a deep retentive clay, upon which is a coating of rich alluvial soil. This clay sub-soil is found in some places to be 90 feet in depth, retaining the moisture throughout the year, whereas in Chalisgaum the soil, even where it is black and comes under the denomination of 1st class, with a relative value according to survey scale of sixteen annas, has a sub-soil either of moorum or hard sheet-rock, assimilating very closely to the soils obtaining in the adjoining collectorate of Ahmednuggur, which were mostly classified under the supervision of the Superintendent while employed there as an Assistant Superintendent. Soils under such circumstances do not retain the moisture long, and in the event of a scanty monsoon the crops fail, the wells become dry, and the country in general suffers periodically from severe drought. On the other hand in the districts along the Taptee, although there is comparatively no surface-water except in the Taptee itself, the wells though deep (averaging from 60 to 90 feet in Sowda and Yawul) retain their supply of water and save the inhabitants and their cattle in seasons of distress.

8. The Superintendent before leaving England was, at the instance he believes of the Revenue Secretary of the India Board, consulted by the Secretary of a Company styling itself "The Anglo Cotton Association Company," who have issued prospectuses avowing an intention to take up 50,000 acres of land in Khandeish. The Secretary was desirous of learning the most eligible available lands for the growth of cotton, linseed; and wheat. Chalisgaum seemed to that gentleman to offer many advantages as to facility of railway communication; but the Superintendent gave it as his opinion that the lands of the Taptee valley far excel those of Chalisgaum as a producing country and less subject to drought.

A. F. DAVIDSON,

Supt. Revenue Survey and Assessment, Khandeish.

*Superintendent's Office, Camp Malligaum,*

*23rd February 1863.*

No. 1085 of 1863.

To the COLLECTOR of KHANDEISH.

SIR,—In continuation of my letter as per margin, I have the honour to remind you of the orders of Government regarding the levy of a light extra tax for roads and schools, and to request that you will desire Mr. Davidson to explain to the ryots at the time of settlement that Government reserve to itself the right to levy hereafter one anna in every rupee in addition to the assessment.

I have the honour to be, &c.

B. H. ELLIS,  
*Camp Suttana, 25th April 1863.* Revenue Commissioner, N.D.

No. 1086 of 1863.

REVENUE DEPARTMENT.

Submitted to Government in continuation of the Revenue Commissioner's letter No. 1038, dated 21st April 1863.

B. H. ELLIS,  
*Camp Suttana, 25th April 1863.* Revenue Commissioner, N.D.

No. 1038 of 1863.

REVENUE DEPARTMENT.

To the Honourable A. D. ROBERTSON,

Secretary to Government.

SIR,—I have the honour to submit for the purpose of being laid before His Excellency the Governor in Council a report from Captain Elphinstone, the late Acting Superintendent of Khandeish Survey, on the revision of the assessment of the Dhoolia and Chalisgaum talookas.

No. 62, dated 7th February 1863, with accompaniments.

The report includes also one village formerly belonging to Dhoolia but now forming a portion of Amulnair to which it was annexed in 1861.

No. 428, dated 24th  
March 1863.

2. The Collector of Khandeish in forwarding the papers has remarked—

“ The arable portion of the Dhoolia talooka may be briefly described as consisting of two valleys—one watered by the river Boree; the other by the river Panjura, upon which the town of Dhoolia is situated. The Boree is a very small stream affording few facilities for irrigation. The Panjura has some very fine works of irrigation, and Captain Fife is now maturing a plan for a very extensive system of canals from the present bundara near the village of Kaperna, which will largely add to the area capable of irrigation. The soil of the Dhoolia talooka is generally inferior, though fair black soil is occasionally found. The climate is about the average of that of the open portion of Khandeish. Fever and ague are prevalent after the monsoon, but not to the same extent as in the western districts.

2. The Chalisgaum talooka is divided into two parts—the country watered by the river Girna, and that on the table-land of the Satmalla hills, which run along the eastern side of the talooka. The valley of the Girna contains much good soil, intermixed occasionally with extensive barren tracts. The country above the ghaut is a rich black soil, but is badly supplied with water, and is periodically visited with most destructive hailstorms. The climate of the talooka generally is good, particularly above the ghauts. Captain Elphinstone in paragraph 15 points out that the British villages on the plateau are much intermixed and surrounded by those of the Nizam, and suggests an exchange of villages with the view of making our territory more compact. This suggestion appears well worth consideration. It would enable the police to exercise a more effective supervision over the turbulent characters of this frontier. The villages of this table-land labour under a great disadvantage in being separated from the railway by the ghauts, which are almost impassable for carts. The

chief ghauts are the Gowtalla, the Purdhari, and the Kussara. The last is in the Ahmednuggur zillah, and is, I believe, the most practicable. It leads to the Nandgaum railway station, and I would strongly urge its being made easily passable for carts. You sanctioned Rs. 8,000 for the repair of the Gowtalla and Purdhari ghauts as a famine-relief work during the past monsoon, but the Engineer department were unable to detach an officer to mark out the line of road. Nothing therefore has been done, and the districts still remain separated from a market by an almost impassable ghaut.

“3. Captain Fife is now engaged on a project for a very extensive bundara on the Girna near the village of Saigaum, and a lake for storing the monsoon waters. These works will irrigate a large portion of the valley of the Girna far into the Bhurgaum talooka. The Girna is a perennial stream; its rocky bed and low banks afford great facilities for irrigation which have not escaped Captain Fife’s experienced eye. The upper course of the Girna in the Malligaum and Baglan talookas has already several extensive works of irrigation, and many more will be added if Captain Fife’s projects are sanctioned.

“4. The mode of husbandry in these two talookas is the same as that of the rest of Khandeish and the Deccan; it is rude and slovenly to the European eye, but perhaps not more so than that of many parts of England previous to the repeal of the corn laws and the discovery of guano and chemical manures. The people are fully aware of the advantages of a rotation of crops and manure, but the prices of agricultural produce have hitherto been so low as to offer few inducements to careful cultivation. In a favourable season the crops yield a large return with but little trouble, and the cultivators are content with that.

“5. The crops are those common to the rest of Khandeish. In Dhoolia and the part of Chalisgaum below the ghauts the khureef harvest is the principal one; but in the rich black soil above the ghauts rubber crops are grown. The Bheels of the Satmalla hills add to their precarious means by collecting the flower of the mhowra, from which an intoxicating spirit is

distilled. The jungle also yields a nut called charoli, which is considered a delicacy, and a gum found on the dhamra tree, which is said to be superior to gum arabic. Captain Elphinstone thinks it should be preserved not only on account of the gum, but also the wood, which is similar to box; but if it never attains a greater size than 5 or 6 inches in diameter, it is not likely to be cut down for timber. I would not therefore interfere with this humble source of profit to the Bheels.

“ 6. The population of both districts is an agricultural one. The trade of the town of Dhoolia is very unimportant, and the small quantity of coarse cloth manufactured is hardly worth notice. The town of Dhoolia contains 10,000 inhabitants, and that of Chalisgaum 2,800. Setting aside the population of these towns, the talooka of Dhoolia contains 78 souls and Chalisgaum 73 souls to the square mile of arable land.

“ 7. The G. I. P. Railway passes through the centre of the Chalisgaum talooka, having a station about a mile from the town of Chalisgaum. Captain Elphinstone in paragraph 12 suggests a branch line of rail connecting Dhoolia with Julgaum and Chalisgaum, and thinks it would yield a profit. He points out the inconvenience of the unfinished state of the line at the Thul ghaut, and the dishonesty of the inferior railway officials. He suggests that the Railway Company should be made liable for damage to property and loss by theft. It is presumed that the works on the Thul ghaut are progressing as rapidly as possible, and when the line is continuous from Bombay, the opportunities of theft will be greatly reduced. The Railway Company as carriers are already liable for the safety of goods entrusted to their care.

“ 8. The Bombay and Agra road passes through Dhoolia, and a branch road to Asseerghur diverges from the main road near the village of Gorga and traverses the western portion of the talooka. These are the only made-roads of these talookas; but the fair-weather roads are kept in fair order, and afford a sufficient means of communication to all parts of the district.



I do not mean that good metalled roads would not be better, but that there is no absolute obstruction to traffic except that at the ghauts, alluded to in paragraph 2.

“ 9. The average error in the measurement and classification of these two talookas was as follows :—

<i>Measurement.</i>		<i>Classification.</i>
	Per cent., goontas.	Per field.
Dhoolia.....	30	$4\frac{1}{2}$
Chalisgaum .....	29	4

“ 10. Captain Elphinstone reports that he has been unable to obtain any records of the management of these districts previous to their becoming British territory. They were under the government of the Peishwas, and no doubt suffered from the anarchy which prevailed during that dynasty ; but there is evidence of their having at a very distinct (*s. o.*) period been much more highly cultivated and populated than even at present. This was probably under the early Mussulman government before the power of the Mogul began to decline.

“ 11. The rule of the British government dates from the year 1818. In that year the cultivated lands of Dhoolia were 16,002 acres, and in 1861-62 they had increased to 67,619 acres, showing an increase of fourfold in forty-four years. The diagram contained in Captain Elphinstone's report shows the rise and fall of the revenue, cultivation, and remissions of the district during these years. In the year 1820 an injudicious attempt was made to raise the assessment, but it was found impracticable, and from that time till 1847-48 the assessment was gradually reduced to its present standard, large remissions having been granted in 1824, 1832, and 1838 on account of failures of the monsoon. The only reduction since 1848 has been in the assessment of land, which had been waste for many years. This was in 1852-53 reduced to eight annas per beega, and gave a great impetus to cultivation of the waste lands ; since that time the cultivation and consequently the revenue has steadily increased.

“ 12. Captain Elphinstone reports in paragraph 25 that though the rates of assessment now to be proposed will apply to 152 villages of the Dhoolia talooka, the classification of 30 of these villages is not yet finished. If the rates are sanctioned these villages can eventually be placed in whichever of the classes their relative advantages may seem to entitle them.

“ 13. Captain Elphinstone has divided the 122 villages now to be assessed into three classes, according to their soil and relative position to markets, road, and rivers, as follows :—

Group of Villages.	No. of Villages.	Conditions affecting the grouping of Villages.	Maximum Dry Crop Rates.
			Rs. a. p.
I.	24	Villages possessing the advantage of being market towns or lying within their immediate vicinity or along the banks of the Panjura river and having the best climate. . . . .	2 6 0
II.	69	Villages similarly situated with respect to markets, but having an inferior climate or being less favoured in other respects; also villages lying along the principal high-roads, but at some distance from markets, and the market towns on the Boree river..	2 2 0
III.	29	Villages more unfavourably situated than the last or lying in the Boree valley, and those among the rocky ranges dividing the two valleys . . . .	1 14 0

“ 14. In paragraph 27 Captain Elphinstone explains that he has placed most of the villages of the more favoured valley of the Panjura in the first and second classes, while those of the Boree valley are placed in the 2nd and 3rd classes. This arrangement appears judicious, as the villages on the Panjura have great advantages of position over those on the Boree river.

“ 15. The rates proposed by Captain Elphinstone are rather higher than those sanctioned last year for the adjoining Songeer petta ; but this increase is justified by the superior advantages of proximity to the large market of Dhoolia and to the railway enjoyed by the villages of the Sobba. The present prices of agri-

cultural produce would bear a much higher rate of assessment than that now proposed ; but the present prices are exceptional : and though it is probable that they will never fall so low as they were before the railway was opened, the re-opening of the American ports and the increased production consequent on the present high prices must before long affect them. I think the rates proposed by Captain Elphinstone are fair and reasonable, and I recommend them for the sanction of Government.

“ 16. There are in the Dhoolia talooka 2,011 acres of garden-land irrigated by 496 wells, and for these lands Captain Elphinstone proposes a maximum rate of three rupees per acre. This was the rate sanctioned for the Songcer petta last year, and I suggest its being made also applicable to the Sooba. Captain Elphinstone explains that there are besides 192 wells in good order, but which have not been used for irrigation for the last fifteen years, and the wells of 23 villages have not yet been fully examined. The settlement of the patusthul rates of assessment is postponed, pending the decision of Government as to the propriety of reverting to the pereewar system or assessment of the crops instead of the land.

“ 17. The financial result of the new assessment will be a small increase to the revenue derived from villages in the first class, but a reduction on the whole of Rs. 2,023 or  $3\frac{1}{4}$  per cent. The average annual remissions during the last forty-four years have been Rs. 2,442, while during the last ten years the average annual remissions have been Rs. 1,492.

“ 18. The village of Jamda was last year transferred from Dhoolia talooka to that of Amulnair, and is placed by Captain Elphinstone in the 2nd sub-division of the 2nd class of the Amulnair villages, the maximum assessment on which is Rs.  $1\frac{1}{2}$  per acre. I beg to suggest that Captain Elphinstone's classification of this village be confirmed.

“ 19. The Chalisgaum talooka consists of 166 villages, of which 25 are alienated or partly so. The jagheerदार of one of these alienated villages has consented to its assessment, so that

the revised rates have to be introduced into 142 villages. The classification of 11 of these villages is not yet finished, but the rates sanctioned for the remaining 131 villages will be applied to them as soon as the class to which they belong is fixed.

"20. The diagram annexed to Captain Elphinstone's report shows the fluctuations of cultivation, assessment, remissions, and collections for the last forty-four years. At the accession of the British government the average assessment was Rs. 2-2 per acre, and though the cultivation gradually increased, with a few exceptional years of failure of the monsoon, it was found necessary from time to time to reduce the assessment to an average of something less than a rupee per acre. Cultivation for the last ten years has steadily increased.

"21. Captain Elphinstone has divided the 130 khalsa villages of Chalisgaum now to be assessed into the following groups :—

Group of Villages.	No. of Villages.	Conditions affecting the grouping of Villages.	Maximum Dry Crop Rates.
			Rs. a. p.
I.	25	Villages most advantageously situated with regard to the markets, the market towns themselves and a few villages in the more fertile portion of the Girna valley, and having the best climate ..	2 8 0
II.	44	Less favourably situated than the last, but lying along the banks of the Girna on the high-road to Chalisgaum and the smaller bazar towns ..	2 4 0
III.	31	Villages less advantageously situated than those of the II. group, both with respect to markets and to climate .. .. .	2 0 0
	26	The villages on the table-land having a scarcity of water and being very inconveniently situated with regard to the railway as well as markets, although possessing an excellent climate and good soil ..	1 12 0
IV.	4	Villages lying amongst the Satmalla hills and being entirely deserted or nearly so, and exposed to the ravages of wild animals and having the worst climate .. .. .	1 10 0

“ 22. These rates are slightly in advance of those proposed for Dhoolia, but considering the advantages of railway, climate, and soil enjoyed by the district, are, I think, sufficiently low to ensure a steady increase of cultivation. I recommend them for the sanction of Government.

“ 23. The settlement of the patusthul rates is for the present postponed for the reason stated in paragraph 16. For motusthul land Captain Elphinstone proposes an assessment of three rupees per acre, which is the same as that proposed for Dhoolia. I think this a fair rate, and would suggest its sanction. There are 500 wells in the Chalisgaum talooka, cultivating an area of 2,009 acres. This does not include the garden-land of the 11 villages not yet classed.

“ 24. The financial effect of these rates will be a small increase of Rs. 2,203 or  $3\frac{3}{4}$  per cent. on the revenue of the whole district. The advantages derived from the railway fully warrant this increase.”

3. I would beg to state that the grouping of the villages and the suitability of the rates proposed were discussed at length semi-officially between Captain Elphinstone, Mr. Ashburner, and myself; and as the report now submitted embodies all that was finally determined upon, I have only to recommend the proposals for sanction.

4. To Captain Elphinstone's report is appended a memorandum No. 72, dated 23rd by Mr. Davidson, the Superintendent, who February 1863. has lately returned from leave. Regarding this memorandum Mr. Ashburner states as follows :—

“ Mr. Davidson \* \* \* expresses his concurrence in the grouping of the villages as arranged by Captain Elphinstone, but considers that the rates should have been fixed somewhat lower for the second and third class villages. He thinks the proposed rates too high to admit of any extension of cultivation in the poorer soils of the Dhoolia talooka. I do not agree with him in this respect. The proposed rates reduce the assessment of Dhoolia  $3\frac{1}{4}$  per cent., and the increase of  $3\frac{3}{4}$  per cent. on the revenue of Chalisgaum cannot be considered

so much an increase as a readjustment of the burden. Cultivation has steadily increased for the last ten years on this assessment, and I cannot anticipate any check to this progress, now that the assessment is more fairly distributed, and the opening of the railway has placed the districts in a more favourable position than during any period of the past ten years of progress."

5. It will be observed that the application of the rate proposed for the 2nd class, in which the bulk of the Dhoolia villages is found, gives an average of only fifteen annas per acre, which must surely be considered as most moderate for a talooka so advantageously situated as Dhoolia. It is chiefly to these villages that Mr. Davidson's remarks refer, and I concur with the Collector in opinion that the rates of both talookas have been properly fixed.

6. The paragraphs regarding irrigational works call for no remark here. The suitability of the Girna and the other rivers for such works will receive every consideration from Captain Fife.

Captain Elphinstone's 7th paragraph. Mr. Ashburner's 3rd paragraph.

Captain Elphinstone's part of paragraph 10. Mr. Ashburner's part of paragraph 5.

7. The Conservator of Forests will be consulted in respect to the value of the dhamra tree and its gum.

8. I beg to suggest that the paragraphs marginally noted be transferred to the Railway department for such notice as may be deemed proper.

Captain Elphinstone's 12th paragraph. Mr. Ashburner's 7th paragraph.

9. Paragraphs 13 and 14 of Captain Elphinstone's report relate to roads. They will be considered in the Public Works department.

*Vide* also paragraphs 2 and 8 of Mr. Ashburner's letter.

10. Adverting to the scattered villages above the Satmalla ghauts, Captain Elphinstone thinks it would be an advantage if an arrangement could be effected with the Nizam's government to exchange these villages for some of His Highness' villages

*Vide* his paragraph 2 quoted above under paragraph 2 of this letter.

which lie amongst ours. I concur with Mr. Ashburner in recommending this proposition for approval, and if it be favourably entertained by Government, I would suggest that negotiations be opened with His Highness the Nizam. Meanwhile I have directed the Superintendent not to give the usual guarantee to the villages above alluded to, pending the receipt of the orders of Government.

11. In the other villages of the two talookas under report I have authorised the introduction of the new rates in anticipation of sanction.

I have the honour to be, &c.

B. H. ELLIS,  
Revenue Commissioner, N. D.

*Camp Malligaum, 21st April 1863.*

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No. 1591.

## REVENUE DEPARTMENT.

*Bombay Castle, 18th May 1863.*

Letter from the REVENUE COMMISSIONER, N. D., No. 1038, dated 21st April 1863, with accompaniments.

Memorandum from ditto ditto No. 1086, dated 25th April 1863, with accompaniment, relative to the introduction of revised rates of assessment into the Dhoolia and Chalisgaum talookas of the Khandeish collectorate. ♦

RESOLUTION.—His Excellency the Governor in Council approves of the rates proposed in Captain Elphinstone's report, and is pleased to confirm the orders of the Revenue Commissioner, N. D., for the introduction of the settlement into the villages of the two talookas above named, and the rates imposed should be guaranteed for 30 years, with the exception that Government reserve to itself the right to impose water-rate or additional assessment on any lands which may be made capable of irrigation by any irrigational works which may hereafter be constructed by Government.

2. With regard to the scattered villages above the Satmalla ghauts, the Governor in Council considers the proposal to effect an exchange of some or all of these villages for others belonging to the Nizam, in order to make our boundary more compact, worthy of adoption, and the subject should be submitted through the Political department for the consideration of the Resident. His Excellency in Council is, however, of opinion that the villages in question should not be deprived of the benefits of the settlement which has been introduced in the rest of the talooka to which they belong, and that if an exchange is effected, it should only be made subject to the maintenance of the settlement, which should therefore be at once introduced into those villages.

3. The paragraphs noted in the margin\* regarding irrigational

\* Paragraph 7 of letter from the Acting Superintendent, Khandeish Revenue Survey, No. 62, dated 7th February 1863.

Paragraph 3 of letter from the Collector of Khandeish, No. 428, dated 24th March 1863.

works and roads should be transferred to the Public Works department of the Secretariat.



Paragraph 6 of letter from the Revenue Commissioner, N. D., No. 1038, dated 21st April 1863.

Paragraphs 13 and 14 of letter from the Acting Superintendent, Khandeish Revenue Survey, No. 62, dated 7th February 1863.

Paragraphs 2 and 8 of letter from the Collector of Khandeish, No. 428, dated 24th March 1863.

Paragraph 9 of letter from the Revenue Commissioner, N. D., No. 1038, dated 21st April 1863.

\* Paragraph 12 of letter from the Acting Superintendent, Khandeish Revenue Survey, No. 62, dated 7th February 1863.

Paragraph 7 of letter from the Collector of Khandeish, No. 428, dated 24th March 1863.

an extra cess for roads and schools are approved by Government.

6. The careful and complete manner in which the results of the Survey have been put before Government in Captain Elphinstone's report and its accompanying diagrams is deserving of high praise. The report and its accompaniments should be printed, and copies sent to the other Surveys as well as to the authorities in Khandeish.

A. D. ROBERTSON,  
Secretary to Government.

To The REVENUE COMMISSIONER, N.D.,\*

The REVENUE COMMISSIONER, S.D.,\*

The POLITICAL DEPARTMENT of the SECRETARIAT, with extracts from the papers noted in the margin.

{ Paragraph 15 of letter from the Acting Superintendent, Khandeish Revenue Survey, No. 62, dated 7th February 1863.  
Paragraph 2 of letter from the Collector of Khandeish, No. 428, dated 24th March 1863.  
Paragraph 10 of letter from the Revenue Commissioner, N.D., No. 1038, dated 21st April 1863.

The PUBLIC WORKS DEPARTMENT of the SECRETARIAT, with extracts from the papers mentioned in paragraph 3 of the Resolution.

The RAILWAY DEPARTMENT of the SECRETARIAT, with extracts from the papers mentioned in paragraph 4 of the Resolution.

\*Note.—Printed copies of the Papers will be sent hereafter.

No. 1262 of 1863.

REVENUE DEPARTMENT.

From B. H. ELLIS, Esq.,

Revenue Commissioner, N. D.,

To the Honourable A. D. ROBERTSON,

Secretary to Government, Bombay.

SIR,—Adverting to paragraph 7 of my letter as per margin, I

No. 1038, dated 21st  
April 1863, handing up  
reports on the revision  
of the assessment of the  
Dhoolia and Chalis-  
gaum talookas.

have the honour to give below for the information of Government a copy of the report (No. 294, dated 6th instant) made by the Conservator of Forests on the “dhamra” tree :—

“The dhamra tree (*Conocarpus latifolius*) yields a very fine tough wood. The natives, however, will not use it for house building as they say it does not last. It is extensively used, however, instead of iron for the axles of carts. The gum is very fine, and is diligently gathered by poor people and sold by them to traders.

“The tree itself is not one of those exclusively preserved for building purposes, and has therefore become the principal firewood now imported into Bombay island.

“Under the circumstances, it is not worth preserving, and the Conservator would not interfere with the gathering of the gum by the poor people or charge them any fee.”

2. The subject calls for no further notice.

I have the honour to be, &c.

B. H. ELLIS,

Revenue Commissioner, N. D.

*Camp Egutpoora, 14th May 1863.*



SELECTIONS FROM THE RECORDS OF THE BOMBAY  
GOVERNMENT.

No. LXXIII.—NEW SERIES.

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P A P E R S  
RELATIVE TO THE INTRODUCTION  
OF  
REVISED RATES OF ASSESSMENT  
INTO  
THE MAHIM TALOOKA  
OF THE  
TANNA COLLECTORATE.

---

Bombay:  
PRINTED FOR GOVERNMENT  
AT THE EDUCATION SOCIETY'S PRESS, BYCULLA.

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1863.



No. 879 OF 1863.

REVENUE DEPARTMENT.

To The Honorable A. D. ROBERTSON,  
Secretary to Government, Bombay.

SIR,—I have the honour to submit for the orders of Government, proposals for the revision of the assessment of the Mahim Talooka, of the Tanna Collectorate.

2. The Acting Collector, in forwarding Captain Waddington's letter, has stated as follows :—

“ Captain Waddington explains the reason why he has submitted this report, observing that the assessment has received the approval of Major Francis. In the paragraphs marginally noted, Captain Waddington describes the general features of the district, from which it will be perceived that the district is hilly; that it contains 330 square miles, equal to 211,200 square acres. That of these 33,135 are arable land; 33,409 wurkus; and the remainder, 144,596 acres, in fact the greater portion, being hill and forest. Captain Waddington observes that the district is extremely feverish and unhealthy. Such I regret to state is the case, cholera, but especially fever, being the prevailing diseases. Both of these are doubtless attributable to the same causes. In the flat country along the coast to the low malarious nature of the country, it being covered with tidal rivers and marshes, which are extremely unhealthy immediately after the rains; and further inland, to the immense amount of jungle, the decayed vegetation of which is carried in the rains till the whole district is covered with decomposing vegetable

matter. The extreme unhealthiness of the districts of Kolwan, Sunjan, and Mahim, and the general complaints of the quality of the drinking-water, led me to request the district Officers to send me in six specimens of water, from villages in the Sunjan district. Such specimens to be taken from wells, which formed the sole supply of the villages in which they were situated. These six bottles I sent to Doctor Giraud, Government Chemical Analyser, who reported as follows :—

“ ‘ I have analysed the water ; it had a very foetid smell, and it contained decomposing organic matter in the proportion of 114 grains to the Imperial Gallon, besides holding gases in solution, the products of the decomposing organic matter. Upon these conditions the deleterious quality of the water depends.

“ ‘ I have the honour to express my opinion that the water referred to, would prove highly prejudicial to health ; and in so far, it would (in common with other depressing agents) render persons drinking it liable to the attacks of cholera and fever ; but I cannot look upon it as the proximate cause of those diseases.

“ ‘ I should think that much might be done to prevent the contamination of the wells referred to, by carefully removing from around them all vegetable growth during the monsoon.’

“ Steps are being taken to have the water supply of these districts carefully examined, in order that measures may be taken to prevent the wells, &c. being filled with decomposing vegetable matter, brought down by the rain from the hills. Could the health of the districts be to any extent improved by a better water supply, the Mahim Talooka would, from its favourable situation, rapidly progress, and cultivation would doubtless extend in the inland portion of the districts.

“ In paragraphs 8 and 9, Captain Waddington reports  
 Paragraphs 8 and 9.      on the markets available for the produce,  
    and the general nature of the roads and

communication throughout the districts. Mr. Bell, the Assistant Collector in charge of the districts marginally noted, has been requested to report carefully and in detail, regarding the roads required in these districts. The result of Mr. Bell's investigations will be presented at the close of the season (in July) in a joint report from the Collector and Executive Engineer, to the Revenue Commissioner, N. D. In the meantime paragraphs 8 and 9 of Captain Waddington's report have been sent to Mr. Bell.

Salsette, Basscin, Mahim, Kolwan, Sunjan.

Government Resolution No. 5532, dated 30th September 1862.

“ Captain Waddington in paragraphs 10, 11, and 12 explains the rates proposed for sweet and salt batty land ; I am of opinion that the rates are fair, and I would recommend their being sanctioned. I would only remark that I do not approve of the principle of adding two annas to the rates when “ dussoota” or second crops are grown. This principle is a complication, it necessitates an examination of the cultivation by the Tullatee and Patell, in whose hands Government must be content to leave the matter. With our present small establishment and heavy work, it will be quite impossible for the Mamlutdar to examine even a percentage of all land whereon a second crop may be grown. This levy opens a road to fraud, and I would much rather prefer to see the levy entirely abolished. There are three courses open—*1st*, to abolish the levy and keep the present rates ; *2nd*, to add one anna to all lands capable of producing a second crop ; or *3rd*, to add the rate of two annas at once to all such lands. As the rates now recommended to be introduced by Captain Waddington are extremely light, and as the districts will immediately upon the opening of the Railway be most advantageously placed with regard to market, I am of opinion that lands capable of producing a second crop, should at once have the extra two anna assessment imposed.

“ The different instances of unequal assessment under the



old system in paragraph 12, fully prove the great necessity of the survey.

Paragraph 13. "I would recommend for sanction the rates for Bhagayut land as given in paragraph 13.

"The rates for Rubbee cultivation and wurkus land, as explained in paragraphs 14 and 15 should be sanctioned.

Paragraphs 16 and 17. "In paragraphs 16 and 17, the general financial results of the assessment are stated ; from which, and from the Diagram accompanying the report, it will be seen that the results are most favourable. The Survey settlement shows an increase of Rs. 7,221 as compared with last year's collections, and when the assessed waste land is taken up, the gross revenue of the district will amount to Rs. 1,06,636.

Government Resolution No. 5532, dated 30th September 1862. "In conclusion, I would suggest that when introducing the assessments, the ryots should be informed that Government reserves to itself the right to add a slight extra assessment for roads and education."

3. The unhealthiness of the climate of Mahim, and of the adjoining district of Sunjan is a matter of notoriety. Mr. Robertson has taken steps to prevent the contamination of the wells by decayed vegetable matter, and the measures which will be adopted with this object will, it is hoped, improve the water supply, the badness of which is, I believe, at present one of the most fertile causes of the insalubrity of the district, but there are many others.

4. The growth of teak quite close to the village sites, is one noticeable feature of the tract near the Ghauts. The houses are in the very midst of teak jungle, and the mass of decayed vegetable matter around them, must have an injurious effect on the health of the inhabitants.





5. I think the Conservator of Forests should direct the clearance of all teak trees within, say 300 yards, of the village sites, and should have only a few trees of such kinds as give a healthy shade.

6. Again, though possibly not a cause of unhealthiness, yet it is a fact, that in the district below the Ghauts, noted for its insalubrity, the date tree grows freely and luxuriantly, and is cherished by Revenue Officers for the liquor it produces. There would be ample means of producing sufficient liquor, were every one of these trees exterminated. The ready means of obtaining drink, afforded by the abundance of the date trees, is one cause of the demoralization of the wild tribes inhabiting this district, and I would authorise the cutting down of every date tree in which there are no private vested rights. Those which are private property, would provide both enough liquor for the people, and enough revenue for Government, and if Government approve, I will direct the Collector to devise some plan for the diminution of the number of trees, by cutting down all those on waste land, and those scattered about in small patches beyond proper control, so as to reduce the trees to the least possible number, and to provide for the proper supervision of those which are left.

Captain Waddington,  
paragraph 8, Acting Col-  
lector, paragraph 3.

7. The subject of roads will be separately considered, when Mr. Bell's report is received.

8. The rates proposed are based on those fixed last season for Bassein, and approved by Government. The difference of half a rupee in the highest maximum rate, represent sufficiently the difference between Mahin and the district of Bassein. The rates range from Rs. 5-8-0 for the best villages, in the best situation, to Rs. 3-0-0 for those in the worst, there being a still lower rate (Rs. 2-8-0) for three villages, especially remote from bazars and difficulty of access.

9. In paragraph 11 of Captain Waddington's letter, the village of Veheldee is mentioned as khotec, and the khote is stated to have declined the settlement. It should have been explained that this village, though called khotec, is not held on the same tenure as the khotec villages of the southern districts, all of which are liable to

a revision of assessment without reference to the wishes of the holders. It is held at a fixed rental not liable to fluctuation on Survey and the tenure resembles the Oodhur Jummabundee of Guzerat, rather than the khotee prevalent in the Southern Konkun. There are, however, other villages held on the same tenure in the Northern Konkun, which, like Vehldee, are not liable to a revision of assessment.

10. Adverting to paragraph 4 of Mr. Robertson's letter, I have to state that the Acting Collector has misapprehended the nature of the additional rate of two annas, imposed on fields from which a second crop is raised. The rate is not liable to annual fluctuations, but is imposed once for all, as part of the regular assessment of the field. This additional rate is perfectly equitable, and in fact the plan proposed by Major Francis is exactly that which Mr. Robertson himself advocates at the close of the paragraph.

• 11. On looking to the application of the proposed rates, and comparing them with present collections, I find that in most cases the fluctuations are not great. The case of Tarrapoor, mentioned in Captain Waddington's 12th paragraph, is a striking exception, as the collections on rice lands will be raised from Rs. 400 to Rs. 887. The Superintendent has been requested to inquire carefully into the cause of so large an increase, and I think it probable that in this case it may be fully accounted for.

12. There are many instances in which a large increase appears to be leviable on small estates consisting of a few fields; on these, the former low assessment may be attributed, either to more land being under cultivation than had been previously taxed, or to land having been reclaimed on condition of a low assessment pending Survey. In all such cases the increase may safely be levied, but there are a few others, the rise in which is not explained. Thus Sheegaum at a low maximum rate of rupees three, rises from Rs. 449 to Rs. 986. If the cause be, that cultivation is now newly brought under assessment, this may properly be levied; but if leviable on precisely the same extent of ground, it is questionable whether the prosperity of the village would not be affected by so sudden a rise.

In this, and the other villages marginally noted, Major Francis has been requested to examine carefully the grounds of the increase, and if he find that the sudden rise in the assessment is likely to press heavily on the occupants, he will lower the assessment by a special rate, without taking the village out of the class to which it properly belongs. These exceptions by no means show that the general rates proposed are too high, considering the rise in the prices and the great facilities which will now be given by the Railway, the increase of Rs. 7,000 above the revenue of last year is very moderate, and I have no doubt but that the district will progress rapidly under the new settlement.

13. Mr. Robertson's proposition for a slight extra assessment for roads and schools, is in accordance with the Government Resolution quoted by him. The amount to be reserved is one anna in every rupee.

14. The Superintendent of Survey has been directed to introduce the rates in anticipation of the sanction of Government.

I have the honour to be,

Sir,

Your most obedient Servant,

B. H. ELLIS,

Revenue Commissioner, N. D.,

*Camp Dhywell, 7th April 1863.*

No. 69. OF 1863.

From Captain W. WADDINGTON,

In charge Revenue Survey and Assessment,  
Tanna and Rutnagherry●

To E. P. ROBERTSON, Esquire,

Acting Collector, Tanna.

SIR,—At the request of Major Francis, (at present absent on special duty in Sind), I have the honour to submit for sanction, the accompanying proposed rates for the Talooka of Mahim.

2. I would premise, that I went through the rates generally with the Superintendent before his departure, and that they had his approval ; I have applied them in detail, and portioned off the villages of the district into groups, coming under the different rates.

3. Before proceeding to explain the manner in which it is proposed to distribute the rates, I will give a brief description of the district, its boundaries, area, general features, climate, and means of communication, both internally, and with regard to more distant markets.

4. The Talooka of Mahim is situated on the north of Basscin, from which it is divided by the Vyturnee creek from its mouth at Dantara, as far as to a point where that river takes a bend towards the north, from whence the boundary, (turning somewhat to the south and east,) is formed by the Tansa river. It was proposed last year, to transfer five villages situated in this part of the Talooka to Basscin ; on the north, the Talooka is bounded by Sunjan ; on the east it is divided from Kolwan and the Jowar Raja's territories, by lofty but irregular hills ; and on the west is the sea.

5. The total length of the district under report, is from north to south about  $24\frac{1}{2}$  miles. In breadth it is about 16 miles for two-thirds of its extent, narrowing in the remainder to nine miles, thus giving an average of  $13\frac{1}{2}$  miles in breadth, and an area of 330 square miles, equal to 211,200 square acres. Of these 33,135 are arable land ; 33,469 wurkus ; and the remainder, hill and forest.

6. The features of the district, as might be expected from its situation, vary considerably ; while for some distance inland the country is pretty flat, and a good deal interspersed with swamps and creeks ; the interior is covered with jungle, and abounds in ranges of hills. Of these two are more particularly remarkable, the one dividing the district into two nearly equal portions ; running as it does nearly due north and south through the centre of the Talook, and the other running in an almost parallel direction, though more irregularly, and forming the eastern boundary of the district. In this latter range,

is situated the lofty hill of Tookmook, the elevation of which is about 2,000 feet above the sea, but it is difficult of access, and the plateau on the summit of small extent.

7. The climate of Mahim after the Monsoon is said to be most unhealthy, and fever especially to be very prevalent, and what is remarkable is, that the coast parts have as bad a name in this respect as the more inland portions. I did not myself go into the district until February, at which time, and up to the end of the season, my establishment did not suffer from fever or any other epidemic, nor did I hear of its prevalence among the inhabitants, but in the early part of the season, it is doubtless as unhealthy as the adjoining districts of Kolwan and Sunjan, which are notorious in that respect. The fall of rain in Mahim, judging from the rain reports for the last two years shown below, would appear to be somewhat greater than in Bassein and nearly equal to that of Sunjan.

Fall of rain in	Bassein.	Mahim.	Sunjan.
1861-62	79·5	96·3	103·5
1862-63	61·11	71·97	67·2

8. Mahim has no made roads, though most parts of the district are passable for carts during the fair season. The principal cart road is that running parallel with the coast through Dantara, Kelweh Mahim, Sheergaum, and Tarrapoor, and is at present the chief means of land communication between Bassein and all the places on the coast as far as to Bulsar, but it is intersected by numerous broad creeks, as at Dantara, Kelweh Mahim, the Satpattee, and Tarrapoor, which render traffic by it most tedious. There is another cart track coming from Blewndy, passing through this district between the two ranges of hills mentioned in paragraph 6, and joining the coast line beyond Tarrapoor. This route avoids the large creeks, but it is very hilly and broken. There are also cart tracks by which traffic can be conveyed to the different Bunders from all parts of the district, situated to the west of the range of hills mentioned in paragraph 6 as running north and south, nearly through the centre of the district; but the villages on the eastern side of that range would be isolated from the remainder of the Talooka, (for there is no cart road over the hills) were it not that the Vyturce river winds round to the



east of it, and is navigable as far as to Munnore; that is, within six or eight miles of its eastern boundary, thus affording an outlet for their produce, and the timber, which is brought down in large quantities, both from the adjacent forests, and also from Kolwan, and Sunjan. Still a road for carts over this range of hills would be a great convenience to these villages, (indeed, as long as a road is not made, they are cut off from the Railway entirely), and such a road might be constructed at no great expense from Munnore *via* the Chabadeh Khind to Nowleh, where I believe is to be a station of the Bombay and Baroda Railway. Roads should also be constructed from Mahim and Sheergaum to the above named station, which from the nature of the ground, might be done at a very moderate cost. The Railway, it is expected, will be opened for traffic during the present year.

9. The principal bazars of the district are Mahim, Kelweh, Sheergaum, Tarrapoor and Munnore; with regard to more distant markets, the district is quite as advantageously situated as Bassein, excepting of course in point of distance from Bombay and Tanna; but this, when communication by water exists, is of little moment, and as above shown, it enjoys water carriage on its south and in its interior (as far as Munnore) by the Vyturnee and Tansa rivers, and there are Bunders on the sea board at Dahtara, Kelweh Mahim, and Tarrapoor. A great deal of rice and wood are exported from the whole district to Surat, Bombay, and Tanna; and the Railway when opened will afford still further facilities for transporting their produce to distant markets.

10. I will now proceed to the question of the assessment it is proposed to introduce. The highest rate for sweet rice land in the neighbouring district of Bassein was six rupees. Taking into consideration the somewhat further distance that produce has to be conveyed, and the situation of this talook, five rupees and eight annas has been adopted as the maximum rate for sweet rice, and four rupees for salt batty. This rate it is proposed to apply to all villages along the coast, decreasing it by eight annas as the villages are further inland, or less favourably situated as regards means of communication, until in those among the hills, the rate is reduced to three rupees; and

in three instances where the people are exceedingly poor and few in number, (being chiefly Warlees,) and the district very unhealthy, two rupees and eight annas are proposed. The above rates are liable to be enhanced by two annas, where "Dussoota" or second crop is grown as is usual in other settled districts.

11. The district contains in all 168 villages; of these, two, Nagaum and Rotih, are held in Inam; one, Vehlolce, is Khotee; and one, Purnally, Shuraktee. This last comes under the new settlement, but the Khote of Vehlolee having on application declined to have his lands measured, there are only 165 villages in which the survey rates are to be introduced. These I propose to divide into groups coming under the following rates:—

No. of Villages.	Proposed rates.		Remarks.
	Rs.	As.	
65 {	5 5	8 0	{ Along the coast and Vyturnee river.
43 {	4 4	8 0	{ Adjoining the former, and within a few miles of water carriage.
54 {	3 3	8 0	{ Chiefly within the range of hills and removed from the river.
3	2	8	At the foot of Tookmook, and surrounded by hills.

12. This classification as a general rule, agrees very fairly with the present collections, but there are a few cases which require to be alluded to. One is Tarrapoor, of which the rice assessment is raised by five rupees and eight annas rate for sweet, and four rupees for salt batty, from Rs. 400 last year to Rs. 887. Its rice land consists of 307 acres, so that hitherto it has been paying about one rupee and four annas per acre, whilst the adjoining village of Koodan, with 322 acres, paid last year Rs. 937, and its assessment at five rupees and eight annas will come to Rs. 1,081. On examining the classification books, I find much of the land grows "Dussoota," thus proving its value; a great portion too of the village is held by

Parsees in easy circumstances, so that on the whole, I think there is no objection to the rate. Another instance is Dooktan, the rice assessment of which at four rupees, amounts to Rs. 1,454, in place of Rs. 909, last year's Jummabundee; but it has some excellent rice land (as I know from personal inspection) and the area is 496 acres. The neighbouring village of Kamblolce with 411 acres only, assessed at four rupees, comes to Rs. 1,128, whilst it paid at last year's Jummabundee Rs. 1,195, or Rs. 286 more than Dooktan. The other instances in which similar difference occurs may be similarly explained, but so far from impugning the accuracy of the present classification and assessment, they confirm it.

13. The amount of Baghayet land in Mahim is small compared with that in Bassein, but it is very similar to it, being watered from "Boorkces," (mere pits without masonry at the sides) by a Persian wheel worked by one buffalo, and producing sugar-cane, plantains, (not so usually grown as in Bassein) pan, ginger, turmeric, chillies, &c. There are only nine villages in which this species of cultivation is carried on to any extent, and in eight of these the garden rates were revised by Mr. Duncan Davidson in 1837. Six rupees is proposed for villages on the coast, (to which indeed the garden cultivation is restricted) as far north as to Sheergaum (excepting Mathaneh, the land of which is very inferior, for which five rupees is sufficient) and five rupees for the rest. According to these rates, the present garden assessment, contrasted with the payments existing prior to 1838, those introduced by Mr. Davidson, and present payments, will stand as follows:—

Garden lands of Villages.	Old rates.		Mr. D. Davidson's rates 1836-37.		Last year's collection.	Sur vey assessment.
	Kumal.	Jumma-bundee.	Kumal.	Jumma-bundee.		
8	11,392	9,829	7,347	6,718	6,830	7,868
Add for the remaining five (5) villages, the rates of which were not revised by Mr. Davidson .....					507	618
Total.					7,337	8,486

This will show a decrease as compared with the assessments of the eight villages prior to 1838 of Rs. 2,906, and an increase of Rs. 1,139, compared with the rates as revised by Mr. Davidson. The total increase on the collections of last year, (which were the largest for the past 20 years) is Rupees 1,149. But with the present high prices of produce and the prospective increase, both in value and facility of transport on the completion of the Railway, this addition to the rates does not appear excessive.

14. There are only 130 acres of Rubbee cultivation in the district, and as there is no material difference between it and land of a similar description in the neighbouring talook of Basscin, I would propose the same rate of one rupee and eight annas per acre.

15. The grass in most parts of the district is coarse and rank, and it is only in the hills which are difficult of access, that it is fit for making hay. The rate therefore I would propose for Wurkus lands in villages along the coast, and whose situation bring them into the five rupees and eight annas and five rupees rates, is three annas, and for those in the interior two annas.

16. The following table will show the collection on the cultivation for last year, and the assessment proposed by the Survey, as also the assessment on waste lands.

	Assessment on Cultivation.					Assessment of Waste lands.					Grand Total.
	Rice.	Baghayet.	Rubbee.	Wurkus.	Total.	Rice.	Baghayet.	Rubbee.	Wurkus.	Total.	
Jumma bundee in 1861-62 .....	83,980	6,830	4	1,072	91,886	..	..	..	..	..	....
By Survey Assessment.....	87,613	8,486	79	2,829	99,007	5,686	36	32	1,875	7,629	1,06,636
Increase..	3,633	1,656	75	1,757	7,221	5,686	36	32	1,875	7,629	1,06,636

17. From this it will be seen that by the rates to be now introduced, there is an increase of Rs. 3,633 on the rice ; in cultivation Rs. 1,656 on the Baghayet ; Rs. 1,757 on the Wurkus lands ; and Rs. 75 on the Rubbee, being an excess of Rs. 7,221 as compared with last year's collections. The assessment on the Wurkus land of Kusba Mahim is not included in this, as the dividing it into numbers is still in progress, and there are therefore no returns ; but it will be completed before the introduction of the rates. In addition to this there is Rs. 7,629, assessment on waste land, which will doubtless soon be taken up and raise the grass rental to Rs. 1,06,636.

18. I will not here enter into the question of allowances to Jemedars, which is a subsequent operation to the introduction of the rates, and which will be carried out by Major Francis.

19. The Survey of this Talooka was effected in the years 1858-59-60-61 by Captain Hobson, the late Mr. Hathway, and Messrs. Harrison and Stevenson. The classification was commenced and completed last year under the superintendence of myself and Mr. Hearn, Major Francis having himself taken charge of my office for a short period during my absence at the end of the season. The usual test returns are attached, which appear satisfactory.

20. In conclusion, I would request the favour of your forwarding this report, if approved, in order that an early answer may be received, and enable the Superintendent to introduce the assessment during the current season.

I have the honour to be,

Sir,

Your most obedient Servant,

W. WADDINGTON, Captain,

In charge Revenue Survey and Assessment, \*  
Tanna and Rutnagherry.

*Camp Callian, 6th February 1863.*

# STATEMENT

CONTRASTING THE

SURVEY SETTLEMENT WITH PAST PAY-  
MENTS FOR THE VILLAGES OF THE  
MAHIM DIVISION.

Number.	NAMES OF VILLAGES.	Last payments.						Rate.
		Average Rice realiza- tions for 10 Years.	According to JummaBundee of 1860-61.					
			Rice.	Baghayet.	Rubbee.	Wurkus.	Total.	
1	2	3	4	5	6	7	8	9
		Rs.	Rs.	Rs.		Rs.	Rs.	Rs.
1	Kusba Mahim.....	5,590	6,181	2,677	..	107	8,965	5½ B 6 4
2	Wurkootee .....	269	307	..	..	..	307	4½
3	Tokralch .....	54	49	..	..	1	50	4½ 3½
4	Janjwalee .....	98	120	..	..	3	123	4½
5	Kelweh .....	2,161	2,338	2,147	..	77	4,562	5½ B 6 R 4
6	Kutalee .....	347	385	..	..	10	395	5½ 4
7	Oosurnch.....	1,566	1,701	37	..	15	1,753	5½ 4 B 6
8	Muthaneh .....	413	474	93	..	9	576	5½ 4 B 5
9	Yedwun .....	566	612	310	..	2	924	5½ B 6 R 4
10	Koreh .....	607	648	207	..	2	857	5½ R 4 B 6

*payments for the Villages of the MAHIM DIVISION.*

Assessment according to proposed Survey Rates.											REMARKS.
On the Cultivation of 1861-C2.					On Waste lands.					Total on Cultivation and Waste.	
Rice.	Baghayet.	Rubbee.	Wurkus.	Total.	Rice.	Baghayet.	Rubbee.	Wurkus.	Total.		
10	11	12	13	14	15	16	17	18	19	20	21
Rs.	Rs.	R.	Rs.	Rs.	Rs.	R.	R.	Rs.	Rs.	Rs.	
6,245 204	3,150	19	..	9,618	121 4	..	..	..	125	9,743	Wurkus not included.
342	..	..	14	356	2	..	..	12	14	370	
63	..	..	3	66	36 2	..	..	43	81	147	
162	..	..	10	172	9	..	..	38	47	219	
2,145 292	2,715	11	130	5,293	74 28	18	3	139	262	5,555	
335 6	..	..	18	359	5 4	..	..	..	9	368	
1,254 12	30	9	55	1,360	22	..	3	54	79	1,439	
368 12	190	..	3	573	132 2	2	..	32	168	741	
506	372	..	4	882	11 4	..	..	..	15	897	
638	186	3	11	838	11 36	6	..	4	57	895	



Number.	NAMES OF VILLAGES.	Last Payments.					Rate.	
		Average Rice realizations for 10 years.	According to Jummabundee of 1860-61.					
			Rice.	Baghayet.	Rubbee.	Wurkas.		Total.
1	2	3	4	5	6	7	8	9
		Rs.	Rs.	Rs.	R.	Rs.	Rs.	Rs.
11	Datewreh.....	1,480	1,650	194	..	6	1,850	5½ R 4 B 6
12	Dongreh .....	297	335	..	..	1	336	5½ R 4
13	Bhadwun.....	412	460	..	..	2	462	5½ 4
14	Dhysur .....	311	346	..	..	7	355	5½ 4
15	Chutaleh .....	1,067	1,207	..	4	31	1,242	5½ 4
16	Teghur.....	473	530	..	..	10	540	5½
17	Wailingee .....	497	548	..	..	1	549	5½ 4
18	Ajuwadee.....	591	641	..	..	2	643	5½ 4
19	Makoontar .....	1,232	1,347	..	..	35	1,382	5½ 4
20	Bundateh.....	52	50	..	..	1	51	4½
21	Mackop .....	645	684	..	..	1	685	5½ 4
22	Makun Repat .....	946	1,076	..	..	25	1,101	5 4
23	Verartun Koord .....	347	390	..	..	22	412	5½

Assessment according to proposed Survey Rates.											REMARKS.
On the Cultivation of 1861-62.					On Waste lands.					Total on Cultivation and Waste.	
Rice.	Baghayet.	Rubbee.	Wurkus.	Total.	Rice.	Baghayet.	Rubbee.	Wurkus.	Total.		
10	11	12	13	14	15	16	17	18	19	20	21
Rs.	Rs.	R.	Rs.	Rs.	Rs.	R.	R.	Rs.	Rs.	Rs.	
599 752	225	..	..	1,576	60	..	..	..	60	1,636	Wurkus not included.
286 8	..	..	12	306	22 2	..	..	19	43	349	
396 4	..	..	14	414	16 2	..	..	..	18	432	
327 126	..	..	18	357	8 4	..	..	2	14	371	
984 116	..	1	67	1,168	50 56	..	..	17	123	1,291	
390	..	..	18	408	3	..	..	..	3	411	
451 20	..	..	37	508	5	..	..	..	5	513	
500 12	..	..	20	532	2	..	..	..	2	534	
1,139 48	..	..	46	1,233	212 12	..	..	79	303	1,536	
58	..	..	2	60	18	..	..	8	26	86	
597 108	..	..	22	727	8 20	..	..	4	32	759	
1,165 100	..	..	65	1,330	45 90	..	..	26	161	1,491	
478	..	..	33	511	33	..	..	7	40	551	

Number.	NAMES OF VILLAGES.	Last Payments.						Rate.
		Average Rice realiza- tions for 10 years.	According to Jumma-bundee of 1860-61.					
			Rice.	Baghayet.	Rubbee.	Wurkus.	Total.	
1	2	3	4	5	6	7	8	9
		Rs.	Rs.	Rs.	R.	Rs.	Rs.	Rs.
24	Majoorlec .....	291	344	..	..	6	350	5½ 4
25	Dhamungam .....	808	913	..	..	13	926	5½ 4
26	Mandeh .....	651	742	..	..	2	744	5½ 4
27	Verartun Boodrook . . .	1,009	1,138	..	..	14	1,152	5 4
28	Julsur .....	1,130	1,282	..	..	21	1,303	5 4
29	Khar Mendree .....	128	144	..	..	..	144	4
30	Tanber Kandaweh .....	432	572	..	..	5	577	5 4
31	Khar Vurushuee.....	66	74	..	..	..	74	4
32	Kundeboreh .....	835	1,008	..	..	1	1,009	5 4
33	Seraleepada.....	1,717	2,280	..	..	6	2,286	5 4
34	Oomburpada .....	160	161	..	..	..	161	4½ 3½
35	Nundad .....	40	43	..	..	..	43	4½
36	Suphaleh .....	656	813	..	..	3	816	4½ 3½

Assessment according to proposed Survey Rates.											REMARKS.
On the Cultivation of 1801-02.					On Waste lands.					Total on Cultivation and Waste.	
Rice.	Baghayet.	Rubbee.	Warkus.	Total.	Rice.	Baghayet.	Rubbee.	Warkus.	Total.		
10	11	12	13	14	15	16	17	18	19	20	21
Rs.	Rs.	R.	Rs.	Rs.	Rs.	R.	R.	Rs.	Rs.	Rs.	
308 12	..	..	27	347	16	..	..	6	22	369	
797 22	..	..	31	850	27 22	..	..	2	51	901	
786 16	..	..	43	845	22 8	..	..	..	30	875	
1,085 248	..	..	50	1,383	5 24	..	..	7	36	1,419	
1,135 302	..	..	50	1,496	22 2	..	..	3	27	1,523	
128	..	..	..	128	2	..	..	..	2	130	
337 124	..	..	21	482	32	..	..	..	32	514	
52	..	..	..	52	8	..	..	..	8	60	
410 628	..	..	19	1,057	78	..	..	..	15	1,072	
621 820	..	..	21	1,462	33 187	..	13	1	234	1,696	
198 10	..	..	9	217	13 3	..	..	2	18	235	
56	..	..	1	57	..	..	..	..	..	57	
709 189	..	..	21	919	36 3	..	..	2	41	960	

Number.	NAMES OF VILLAGES.	Last Payments.						Rate.
		Average Rice realiza- tions for 10 years.	According to Jumma-bundee of 1860-61.					
			Rice.	Baghayet.	Rubbee.	Wukus.	Total.	
1	2	3	4	5	6	7	8	9
		Rs.	Rs.	Rs.	R.	Rs.	Rs.	Rs.
37	Nowguh .....	996	1,177	..	..	14	1,191	5 4
38	Kuralee Pada.....	295	340	..	..	..	340	5 4
39	Kandeenoman .....	102	113	..	..	..	113	5 4
40	Dhyal .....	315	406	..	..	2	408	5 4
41	Penund .....	513	568	..	..	1	569	5
42	Oochkolee .....	69	89	..	..	3	92	5
43	Tandoolwadee.....	662	754	..	..	3	757	4½
44	Laltun .....	249	292	..	..	1	293	4½
45	Kurkolce .....	663	715	..	..	..	715	4½
46	Kuwarch .....	470	511	..	..	..	511	4
47	Nowlee .....	418	480	..	..	..	480	4
48	Yecoor .....	396	433	..	..	..	433	4
49	Palgurh .....	714	766	..	..	5	771	5
50	Tembooreh .....	737	766	..	..	31	797	5 4
51	Marwalee.....	65	78	..	..	..	78	4
52	Ambadee .....	109	122	..	..	..	122	4

Assessment according to proposed Survey Rates.											REMARKS.
On the Cultivation of 1861-62.					On Waste lands.					Total on Cultivation and Waste.	
Rice.	Baghayet.	Rubbee.	Wurkus.	Total.	Rice.	Baghayet.	Rubbee.	Wurkus.	Total.		
10	11	12	13	14	15	16	17	18	19	20	21
Rs.	Rs.	R.	Rs.	Rs.	Rs.	R.	R.	Rs.	Rs.	Rs.	
785 448	..	..	36	1,269	10 92	..	..	10	112	1,381	
372 28	..	..	7	407	15 12	..	..	..	27	434	
82 16	..	..	8	106	..	..	..	..	..	106	
305 28	..	..	7	340	5 4	..	..	..	9	349	
680	..	1	14	695	5	..	..	..	5	700	
80	..	..	4	84	2	..	..	1	3	87	
1076	..	..	11	1,087	22	..	..	9	31	1,118	
337	..	..	5	342	7	..	..	2	9	351	
742	..	..	13	755	133	..	..	4	137	892	
558	..	..	41	599	28	..	..	..	28	627	
460	..	..	31	491	8	..	..	3	11	502	
558	..	..	19	577	32	..	..	48	80	657	
965	..	..	50	1,015	60	..	..	49	109	1,124	
795 6	..	..	39	840	65 4	..	..	51	120	960	
100	..	..	4	104	..	..	..	..	..	104	
140	..	..	13	153	8	..	..	7	15	168	

Number.	NAMES OF VILLAGES.	Last Payments.						Rate.
		Average Rice realiza- tions for 10 years.	According to Jummabundee of 1860-61.					
			Rice.	Beghayet.	Rubbee.	Wurkus.	Total.	
1	2	3	4	5	6	7	8	9
		Rs.	Rs.	Rs.	R.	Rs.	Rs.	Rs.
53	Shelwal .....	100	110	..	..	..	110	3½
54	Allalee .....	353	384	..	..	3	387	5½ 4
55	Dhumsar .....	527	599	..	..	21	620	5½ 4
56	Karekoorun.....	441	525	.	..	1	526	5½
57	Dapoollee.....	517	538	..	..	..	538	5½ 4
58	Marekoorun .....	341	374	..	..	..	374	5
59	Kalareh .....	377	409	..	..	54	463	5½ 4
60	Kambulgam .....	112	131	..	.	4	135	5
61	Punchallee .....	622	670	..	..	25	695	5 4
62	Oombrolee .....	827	922	..	..	20	942	5 4
63	Kalgaon .....	380	427	..	..	1	428	5
64	Sheergaon .....	1,666	1,859	658	..	73	2,590	5½ 4 B 5
65	Chabadeh .....	415	540	..	..	6	546	4
66	Nandgaon .....	160	187	..	..	1	188	3

## Assessment according to proposed Survey Rates.

On the Cultivation of 1861-62.					On Waste lands.					Total on Cultivation and Waste.	REMARKS.
Rice.	Baghayet.	Rubbee.	Wurkus.	Total.	Rice.	Baghayet.	Rubbee.	Wurkus.	Total.		
10	11	12	13	14	15	16	17	18	19	20	21
Rs.	Rs.		Rs.	Rs.	Rs.	R.	R.	Rs.	Rs.	Rs.	
168	..	..	11	179	7	..	..	6	13	192	
333	..	..	39	398	22	..	..	10	36	434	
26					4						
495	..	..	8	503	16	..	..	36	54	557	
					2						
572	..	..	40	636	19	..	..	5	38	674	
24					14						
514	..	..	1	515	27	..	..	..	29	544	
					2						
355	..	..	7	362	40	..	..	14	54	416	
327	..	..	7	334	27	..	..	55	84	418	
					2						
122	..	..	8	130	25	..	..	17	42	172	
725	..	..	13	740	25	..	..	13	38	778	
2											
952	..	..	45	1,065	25	..	..	11	88	1,153	
68					52						
405	..	..	11	416	20	..	..	87	107	523	
1,501	1,000	7	43	2,695	40	10	..	46	96	2,791	
144											
578	..	..	28	606	28	..	..	2	30	636	
204	..	..	23	227	13	..	..	5	18	245	



Number.	NAMES OF VILLAGES.	Last Payments.						Rate.
		Average Rice realiza- tions for 10 years.	According to Jummiabundee of 1860-61.					
			Rice.	Baghayet.	Rn'hee.	Wurkus.	Total.	
1	2	3	4	5	6	7	8	9
		Rs	Rs.	Rs.	R.	Rs.	Rs.	Rs.
67	Oodhan .....	222	252	..	..	..	252	3
68	Chelhar .....	54	76	..	..	3	79	3
69	Kootul.....	33	28	..	..	..	28	3
70	Dhamkhund .....	112	138	..	..	1	139	3
71	Kodaneh .....	212	309	..	..	..	309	3
72	Bhandun .....	99	92	..	..	1	93	3
73	Ambhan .....	154	195	..	..	..	195	3
74	Netallee .....	8	8	..	..	..	8	3½
75	Dookthan .....	815	909	..	..	5	914	4
76	Goadeh .....	500	550	..	..	6	556	4
77	Osureh.....	460	554	..	..	3	557	4
78	Kamblotee .....	1,057	1,195	..	..	22	1,217	4
79	Halowlee.....	523	613	..	..	9	622	3½
80	Boteh .....	129	186	..	..	3	189	3½
81	Soych .....	32	37	..	..	2	39	3½
82	Tamsaee .....	58	59	..	..	..	59	3½
83	Dochadeh .....	230	279	..	..	3	282	3½
84	Bahadowlee .....	361	391	..	..	1	392	3½
85	Dhysur .....	500	677	..	..	14	691	4

Assessment according to proposed Survey Rates.											REMARKS.
On the Cultivation of 1861-62.					On Waste lands.					Total on Cultivation and Waste.	
Rice.	Baghayet.	Rubbee.	Wurkus.	Total.	Rice.	Baghayet.	Rubbee.	Wurkus.	Total.		
10	11	12	13	14	15	16	17	18	19	20	21
Rs.	Rs.	R.	Rs.	Rs.	Rs.	R. R.	Rs.	Rs.	Rs.		
261	..	..	20	281	20	..	..	2	32	313	
39	..	..	4	43	1	..	..	2	3	46	
33	..	..	1	34	15	..	..	4	19	53	
115	..	..	5	120	11	..	..	1	12	132	
357	..	..	14	371	27	..	..	..	27	398	
90	..	..	7	97	10	..	..	..	10	107	
234	..	..	17	251	21	..	..	..	24	275	
54	..	..	9	63	..	..	..	..	..	63	
1,454	..	..	25	1,479	156	..	..	..	156	1,635	
748	..	..	13	761	26	..	..	1	27	788	
632	..	..	11	643	88	..	..	2	90	733	
1,128	..	..	21	1,149	68	..	..	9	77	1,226	
801	..	..	34	835	35	..	..	2	37	872	
179	..	..	15	194	3	..	..	..	3	197	
56	..	..	4	60	..	..	..	..	..	60	
89	..	..	6	95	24	..	..	3	27	122	
320	..	..	7	327	5	..	..	..	5	332	
441	..	..	18	459	3	..	..	..	3	462	
712	..	..	23	735	118	..	..	7	125	860	

Number.	NAMES OF VILLAGES.	Last Payments.						Rate.
		Average Rice realiza- tions for 10 years.	According to Jummaabundec of 1860-61.					
			Rice.	Baghayet.	Rubbee.	Wurkus.	Total.	
1	2	3	4	5	6	7	8	9
		Rs.	Rs.	Rs.	R.	Rs.	Rs.	Rs.
86	Sakneh .....	464	542	..	..	1	542	4
87	Naojeh.....	573	788	..	..	..	788	4 3
88	Nagaon .....	205	274	..	..	..	274	4
89	Tellalee .....	137	221	..	..	..	221	3
90	Jansuec .....	14	14	..	..	..	14	2½
91	Gunjeh .....	175	211	..	..	2	213	2½
92	Kheireh .....	52	58	..	..	..	58	2½
93	Iveshet.....	33	68	..	..	6	74	3
94	Velolee .....	128	148	..	..	1	149	3½
95	Satewlee .....	176	242	..	..	1	243	2½
96	Goondaweh.....	66	45	..	..	2	47	3½
97	Wunnaee .....	63	95	..	..	..	95	3½
98	Koodeh .....	313	418	..	..	6	424	3½
99	Geralleh .....	363	417	..	..	..	417	4
100	Pargaon .....	639	713	..	..	6	719	4
101	Sonaweh .....	482	546	..	..	4	550	4 3
102	Dharshet .....	181	209	..	..	..	209	4½ 3½

## Assessment according to proposed Survey Rates.

On the Cultivation of 1861-62.					On Waste lands.					Total on Cultivation and Waste.	REMARKS.
Rice.	Baghayet.	Rubbee.	Warkus.	Total.	Rice.	Baghayet.	Rubbee.	Warkus.	Total.		
10	11	12	13	14	15	16	17	18	19	20	21
Rs.	Rz.	R.	Rs.	Rs.	Rs.	R.	R.	Rs.	Rs.	Rs.	
700	..	..	15	715	16	..	..	5	21	736	
802	..	..	8	810	138	..	..	4	145	955	
390	..	..	..	390	60	..	..	8	68	458	
289	..	..	17	300	9	..	..	..	9	309	
72	..	..	4	76	..	..	..	..	..	76	
258	..	..	9	267	5	..	..	..	5	272	
114	..	..	5	119	7	..	..	..	7	126	
54	..	..	2	56	16	..	..	1	17	73	
133	..	..	5	138	3	..	..	..	3	141	
203	..	..	6	209	24	..	..	..	24	233	
70	..	..	6	76	44	..	..	4	48	124	
73	..	..	..	73	14	..	..	3	17	90	
413	..	..	6	419	102	..	..	11	113	532	
440	..	..	7	447	34	..	..	2	36	483	
968	..	..	15	983	36	..	..	11	47	1,030	
614	..	..	7	621	18	..	..	1	55	676	
274	..	..	10	284	36	..	..	..	23	307	
					7	..	..	..			
					16						

Number.	NAMES OF VILLAGES.	Last Payments.						Rate.
		Average Rice realiza- tions for 10 years.	According to Jumma-bundee of 1860-61.					
			Rice.	Baghayet.	Rubbee.	Wurkus.	Total.	
1	2	3	4	5	6	7	8	9
		Rs.	Rs.	Rs.	R.	Rs.	Rs.	Rs.
103	Oomburpada .....	102	116	..	..	..	116	4½ 3½
104	Chunnch .....	286	331	..	..	13	344	4½ 3½
105	Midwad .....	56	65	..	..	5	70	4½ 3½
106	Khanewra .....	534	636	..	..	4	640	4½ 3½
107	Bhalewlee .....	151	196	..	..	18	214	4½
108	Sukwar .....	152	131	..	..	12	143	3
109	Saoneh.....	317	501	..	..	6	507	3½
110	Doonver .....	381	447	..	..	5	452	3½
111	Kunulgaom .....	220	242	..	..	7	249	3
112	Nalshet .....	28	28	..	..	..	28	3
113	Keweh.....	442	520	..	..	1	521	3
114	Shulshet .....	68	94	..	..	1	95	3
115	Banjurchole .....	75	76	..	..	1	77	3
116	Bhopalce .....	234	279	..	..	..	279	3
117	Borandeh .....	95	151	..	..	1	152	3
118	Kooshad .....	98	117	..	..	..	117	3
119	Paleh .....	66	81	..	..	3	84	3

Assessment according to proposed Survey Rates.											REMARKS.
On the Cultivation of 1861-62.					On Waste lands.					Total on Cultivation and Waste.	
Rice.	Baghayet.	Rubbee.	Wurkus.	Total.	Rice.	Baghayet.	Rubbee.	Wurkus.	Total.		
10	11	12	13	14	15	16	17	18	19	20	21
Rs.	Rs.	R.	Rs.	Rs.	Rs.	R.	R.	Rs.	Rs.	Rs.	
92 17	..	..	..	109	5	..	..	1	6	115	
207 115	..	..	2	324	20 19	..	..	..	39	363	
79	..	..	..	79	2	..	..	..	2	81	
614 35	..	..	4	653	86 10	..	..	..	96	749	
247	..	..	3	250	..	..	..	..	..	250	
132	..	..	3	135	66	..	..	2	68	203	
551	..	2	14	567	14	..	..	16	30	597	
612	..	..	25	637	3	..	..	..	3	640	
207	..	..	12	219	54	..	..	..	54	273	
147	..	..	8	155	..	..	..	..	..	155	
585	..	..	25	610	27	..	..	12	39	649	
109	..	..	5	114	27	..	..	7	34	148	
62	..	..	1	63	3	..	..	1	4	67	
237	..	..	17	254	42	..	..	2	44	298	
135	..	..	1	136	43	..	..	18	61	197	
226	..	5	7	238	45	..	..	5	50	288	
94	..	..	1	95	12	..	..	..	12	107	

Number.	NAMES OF VILLAGES.	Average Rice realiza- tions for 10 years.	Last Payments.					Rate.
			According to Jummabundee of 1860-61.					
			Rice.	Baghayet.	Rubbee.	Warkus.	Total.	
1	2	3	4	5	6	7	8	9
		Rs.	Rs.	Rs.	R.	Rs.	Rs.	Rs.
120	Saorkhund.....	173	215	..	..	1	216	3½
121	Takchal .....	50	55	..	..	..	55	3½
122	Munnore .....	418	462	..	..	5	467	3½
123	Kunshet .....	41	45	..	..	..	45	3
124	Waknee .....	53	57	..	..	..	57	3
125	Wadeolce.....	179	145	..	.	..	145	3
126	Oosrolee .....	85	70	..	..	..	70	3
127	Somereh .....	340	380	..	..	2	382	3
128	Kateleh .....	426	462	..	..	4	466	3
129	Masonch .....	556	625	..	..	2	627	4
130	Kokner .....	178	231	..	..	4	235	3½
131	Sagaon.....	192	217	..	..	6	223	3½
132	Geernolee .....	327	359	..	..	..	359	3½
133	Deokhep .....	495	519	..	..	..	519	3½
134	Nundorch .....	301	366	..	..	..	366	4
135	Purgeh .....	456	488	..	..	..	488	4
136	Beerwadce .....	321	311	..	..	..	311	4½
137	Betegaon.....	336	343	..	..	2	345	3½

## Assessment according to proposed Survey Rates.

On the Cultivation of 1801-02.					On Waste lands.					Total on Cultivation and Waste.	REMARKS.
Rice.	Baghayet.	Rubbee.	Wurkus.	Total.	Rice.	Baghayet.	Rubbee.	Wurkus.	Total.		
10	11	12	13	14	15	16	17	18	19	20	21
Rs.	Rs.	R.	Rs.	Rs.	Rs.	R.	R.	Rs.	Rs.	Rs.	
217	..	..	5	222	5	..	..	..	5	227	
82	..	..	7	89	2	..	..	..	2	91	
549	..	..	25	574	14	..	..	4	18	592	
174	..	..	6	180	4	..	..	..	4	184	
81	..	..	3	84	6	..	..	..	6	90	
217	..	..	6	223	5	..	..	..	5	228	
129	..	..	5	134	3	..	..	..	3	137	
510	..	..	6	516	16	..	..	2	18	534	
615	..	..	6	621	10	..	..	7	17	638	
686	..	..	9	695	20	..	..	1	21	716	
259	..	2	14	275	..	..	..	..	..	275	
290	..	..	17	307	11	..	..	..	11	318	
434	..	..	13	447	21	..	..	3	24	471	
668	..	..	24	692	35	..	..	..	35	727	
404	..	..	24	428	40	..	..	51	91	519	
720	..	..	75	795	76	..	..	4	80	875	
369	..	..	5	374	9	..	..	1	10	384	
388	..	..	5	393	49	..	..	65	114	507	



Number.	NAMES OF VILLAGES.	Last Payments.						Rate.
		Average Rice realiza- tions for 10 years.	According to Jummabundee of 1800-61.					
			Rice.	Baghayet.	Rubbee.	Warkus.	Total.	
1	2	3	4	5	6	7	8	9
		Rs.	Rs.	Rs.	R.	Rs.	Rs.	Rs.
138	Surolee .....	766	855	..	..	..	855	5 4
139	Boesur.....	502	557	..	..	..	557	4½
140	Kulaleh .....	325	332	..	..	..	332	3½
141	Māu.....	302	299	..	..	..	299	3½
142	Wurangreh .....	171	174	..	..	..	174	3
143	Shegaon .....	432	442	..	..	7	449	3
144	Kootad .....	50	52	..	..	3	55	3
145	Wawch .....	164	164	..	..	..	164	4
146	Salgaon .....	46	49	..	..	..	49	4
147	Naoleh.....	83	95	..	..	20	115	4
148	Koodun .....	926	937	..	..	..	937	5½
149	Kusbeh Tarapoor .....	376	400	278	..	23	701	5½ B 5 4
150	Dhysur .....	921	991	..	..	4	995	5
151	Putramalee .....	415	496	..	..	..	496	5½ 4
152	Wenjnee .....	504	550	..	..	1	551	5½
153	Koorgaon .....	642	747	..	..	..	747	5

## Assessment according to proposed Survey Rates.

On the Cultivation of 1861-62.					On Waste lands.					Total on Cultivation and Waste.	REMARKS.
Rice.	Baghayet.	Rubbee.	Warkus.	Total.	Rice.	Baghayet.	Rubbee.	Warkus.	Total.		
10	11	12	13	14	15	16	17	18	19	20	21
Rs.	Rs.	R.	Rs.	Rs.	Rs.	R.	R.	Rs.	Rs.	Rs.	
823 74	..	..	17	914	95	..	..	136	231	1,145	
585	..	..	28	613	86	..	..	43	129	742	
350	..	..	13	363	14	..	..	..	14	377	
310	..	..	21	331	26	..	..	1	27	358	
387	..	..	38	425	4	..	..	..	4	429	
966	..	..	20	986	42	..	..	..	42	1,028	
45	..	..	1	46	..	..	..	6	6	52	
222	..	..	15	237	..	..	..	3	3	240	
60	..	1	9	70	42	..	..	15	57	127	
80	..	..	9	89	26	..	..	39	65	154	
1,081	..	..	59	1,140	3	..	..	..	3	1,143	
627 158	402	1	19	1207	5 98	..	..	3	106	1,313	
935	..	..	60	995	..	..	..	47	47	1,042	
498 2	..	..	4	504	52 2	..	..	6	60	564	
525	..	..	16	541	88	..	..	6	94	635	
743	..	..	84	827	78	..	..	27	105	932	

Number.	NAMES OF VILLAGES.	Last Payments.						Rate.
		Average Rice realiza- tions for 10 years.	According to Jumma-bundees of 1861-61.					
			Rice.	Beghayet.	Rubbee.	Warkus.	Total.	
1	2	3	4	5	6	7	8	9
		Rs.	Rs.	Rs.	R.	Rs.	Rs.	Rs.
154	Gewalee .....	448	525	20	..	..	545	5½ 4
155	Akurputtee .....	753	876	7	..	..	883	5½ B 5 4
156	Poprun .....	815	924	47	..	2	973	5 B 5½ 4
157	Pasthul .....	459	479	..	..	1	480	5
158	Salwud .....	585	644	..	..	36	680	5½
159	Koombolee .....	1,417	1,576	..	..	..	1,576	5½ 4
160	Goondolee .....	351	359	..	..	..	359	5½
161	Pantembah .....	1,069	1,156	..	..	13	1,169	5½ 4
162	Aluvanee.....	306	352	..	..	1	353	5½ 4
163	Nandgaon .....	1,426	1,557	155	..	30	1,742	6 B 5½ 4
164	Moonumbah .....	497	578	..	..	16	594	5½ 4
165	Purnallee.....	18	18	..	..	..	18	5 4
Total..		74,179	83,980	6,830	4	1,072	91,886	..

Assessment according to proposed Survey Rates.											REMARKS.
On the Cultivation of 1861-62.					On Waste lands.					Total on Cultivation and Waste.	
Rice.	Baghayet.	Rubbee.	Warkus.	Total.	Rice.	Baghayet.	Rubbee.	Warkus.	Total.		
10	11	12	13	14	15	16	17	18	19	20	21
Rs.	Rs.	R.	Rs.	Rs.	Rs.	R.	R.	Rs.	Rs.	Rs.	
443	..	..	..	617	14	..	..	..	18	635	
174					4						
707	12	..	6	769	47	..	..	1	136	905	
44					88						
858	67	1	6	974	13	..	..	..	13	987	
42											
535	..	..	35	570	10	..	..	40	50	620	
547	..	..	21	568	63	..	..	95	158	726	
1,059	..	..	24	1,109	41	..	..	25	74	1,183	
26					8						
429	..	..	..	429	11	..	..	32	43	472	
1,188	..	..	36	1,228	55	..	..	31	90	1,318	
					4						
338	5	1	7	359	..	..	..	6	6	365	
8											
671	132	15	18	1,330	49	13	..	30	94	1,424	
494					2						
396	..	..	19	461	3	..	..	..	7	468	
46					4						
25	..	..	1	26	..	..	..	..	..	26	
87,613	8,486	79	2,829	99,007	5,686	36	32	1,875	7,629	1,06,636	

W. WADDINGTON, Captain,

In charge Revenue Survey and Assessment,

Tanna and Rutnagherry.

*Classification Test Statement.*

Names of Assistants.	No. of Fields Tested.	Result.										Average error.
		Errors within										
		Pies.	As.	As. Ps.	As.	As. Ps.	As.	As. Ps.	Annas.			
		6	1	1 6	2	2 6	3	3 6	4			
Capt. W. Waddington, and Mr. E. H. Hearn.	2,801	591 1,173	725	207	80	18	6	..	1		7 Pies.	

W. WADDINGTON, Captain,  
In charge Revenue Survey and Assessment,  
Tanna and Rutnagberry.

*Measurement Test Statement.*

Name of Talooka.	Years.	No. of Fields Tested.	Fields in which the percentage error was within.										Errors above 10 per cent.
			1	2	3	4	5	6	7	8	9	10	
Mahim .....	{ 1859-60 1861-62 }	{ 1,598 }	839	407	164	63	48	27	13	8	8	5	16

W. WADDINGTON, Captain,  
In charge Revenue Survey and Assessment,  
Tanna and Rutuagherry.

No. 515 B.

*Revenue Survey and Assessment.*

No. 1384.

REVENUE DEPARTMENT.

*Bombay Castle, 29th April 1863.*

Letter from the Revenue Commissioner, N. D., No. 879, dated 7th April 1863, with accompaniments—Relative to the introduction of revised rates of Assessment into the Mahim Talooka, of the Tanna Collectorate.

RESOLUTION.—The Governor in Council approves of the rates proposed in Captain Waddington's report, which are stated to be based on the rates already sanctioned for the Basscin Talooka, and is pleased to confirm the orders of the Revenue Commissioner, N. D., for the introduction of the Settlement.

2. The result of the measures taken by the Acting Collector of Tanna for preventing the contamination of the wells by decayed vegetable matter, with a view of diminishing the insalubrity of the district should be reported to Government.

3. The growth of Teak trees quite close to the village sites is also stated to be productive of an injurious effect on the health of the inhabitants. The Revenue Commissioner's proposal for remedying this evil by the clearance of all Teak trees within 300 yards of the village sites may be referred to the Conservator of Forests for report.

4. His Excellency in Council concurs with Mr. Ellis in attributing the demoralization of the wild tribes inhabiting the district to the ready means of obtaining drink afforded by the abundance of date-trees growing therein, and authorizes him to instruct the Collector as proposed in his 6th paragraph.

5. The paragraphs noted in the margin regarding roads should

Paragraphs 6 and 8 of Major Waddington's report, No. 69, dated 6th February 1863.

Paragraph 3 of letter from the Acting Collector of Tanna, No. 306, dated 18th February 1863.

Paragraph 7 of letter from the Revenue Commissioner, N. D., No. 879, dated 7th April 1863.

be transferred to the Public Works Department of the Secretariat, in which the fur-

ther report promised on the subject should be submitted for consideration and disposal.

6. The result of the inquiries which the Revenue Commissioner has directed the Superintendent to make, as to the cause of the large increases of collections in the villages mentioned in Mr. Ellis' 11th and 12th paragraphs to be reported to Government. .

7. Notice should be given to the cultivators that it is possible a further cess may hereafter be imposed, for purposes of local education and road-making, but that if imposed it will not, during the period of Settlement, exceed one anna in the rupee, and will be spent in the district.

A. D. ROBERTSON,  
Secretary to Government.

To The REVENUE COMMISSIONER, N. D.,  
The CONSERVATOR of FORESTS, with extract (paragraphs 4 and 5) of Mr. Ellis' letter,  
The PUBLIC WORKS DEPARTMENT of the SECRETARIAT, with the extracts mentioned in the margin of paragraph 5.





SELECTIONS FROM THE RECORDS OF THE BOMBAY  
GOVERNMENT.

No. LXXIV.—NEW SERIES.

---

P A P E R S

RELATIVE TO THE

INTRODUCTION OF REVISED RATES OF ASSESSMENT

INTO THE

MAMLUUDARS' AND TULLEH MAHALKURREES' DIVISIONS

OF THE

R A J P O O R E E T A L O O K A

OF THE

COLABA SUB-COLLECTORATE.

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Bombay:

PRINTED FOR GOVERNMENT

AT THE EDUCATION SOCIETY'S PRESS, BYCULLA.

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1863.



No. 851 of 1863.

REVENUE DEPARTMENT.

To the Honorable A. D. ROBERTSON,  
Secretary to Government.

Revision of the Assessment of the Mamlutdar Division and the Tulleh Petta of the Rajpooree Talooka.

Sir,—I have the honour to forward for the purpose of being laid before Government, the accompanying letter from Major Francis, Superintendent Tanna Survey, No. 54, dated 2nd January 1863.

2. The Acting Sub-Collector of Colaba, to whom it is addressed, has forwarded it without remark; the Acting Collector of Tanna has written as follows :—

No. 293 dated 17th  
February 1863.

“ Paragraphs 1 and 2 of Major Francis’ report explain fully the geographical situation of the districts newly revised, while paragraph 3 treats of the nature of the roads and refers to the advisability of constructing a branch road from Tulleh to the Mahableschwur road. Paragraphs 4 and 5 describe nature of the cultivation of the district and the market it has for its produce, and in the concluding portion of paragraph 5, Major Francis draws attention to the levy of a fee by the Hubshee on boats passing up the Junjeera creek, observing that the Tulleh people find this fee a source of some little annoyance and a considerable disadvantage to this otherwise favourable outlet for their produce. Major Francis states it would be a considerable advantage to this part of the district were some arrangement made with the authorities of the Junjeera State for the discontinuance of the levy : he is afraid however that the unwillingness of the Hubshee’s Government to enter into any arrangements with our Government will render it useless for us to moot the question. I fully concur with Major Francis both as to the propriety of doing away with the levy and as to the difficulty of inducing the Hubshee’s Government, whose policy is obstructive and retro-

gated to the last degree, to come to any agreement. Inquiry will be made as to the exact nature and amount of this levy, and should any information worth submitting to Government be obtained, a report on the subject will be forwarded.

“ Paragraph 6 details the number of villages in each division and the number of those that are under Khottee tenure.

“ In paragraphs 7 and 8 we find the rates proposed to be introduced and the reasons given for the rates thus proposed. In paragraph 9 Major Francis points out that for the two last groups of villages he has introduced two classes of rates, or an intermediate rate of half-a-rupee more than that of the proper maximum of the group, and a half less than that of the preceding group. The plan was first introduced in Bassein, and I agree with Major Francis that it has obvious advantages: these are clearly detailed in paragraphs 9 and 10. In paragraph 11 the maximum rates of each group as fixed according to this plan are pointed out.

“ The rates for rubbee lands as shown in paragraph 12 are fair and suited to the district.

“ For the reasons given in paragraph 13 I am of opinion that the rates for Wurkus lands should be sanctioned.

“ In paragraph 14 the assessment of the district under the proposed rates is exhibited, from which it appears that they cause a reduction of Rs. 14,961 on the revenue realised last year.

“ Major Francis points out that the previous year was a year of high collections, and that it was only once exceeded and that was in 1859-60, that the new rates are, however, fully Rs. 5,000 in excess of the average realisation for the last ten years.

“ On referring to the Diagram accompanying Major Francis' report it will be seen that from the year 1855-56 there has been a steady increase in the realisations for the last seven years. This has no doubt been owing to the gradually increasing price of grain and to the fact that hitherto Government has been in the habit under the Tussur rates of taking its share in the profits from a rise in prices of agricultural produce. Looking then on the fact that the cultivation for the last ten years has been at a

stand still, that the present rates are considerably in excess of the rates of the first ten years and about Rs. 5,000 above the last ten years, that they are not however so expressly high as during the seven years from 1855-56 to 1861-62, that the value of agricultural produce is greater than what it was, and is not likely to become less, we may safely conclude that the rates are not too high. Cultivation has been at a stand still for some time: this has no doubt been owing to the Government having hitherto taken under the Tussur rates continual advantage of the rise in prices. Now, however, that the rates are fixed for a term of years, the cultivators will reap all the profit of the increase of prices; this will doubtless encourage them on taking up extra land for cultivation.

“ In paragraph 17 Major Francis observes there is a further sum of Rs. 3,958 comprising the assessment of waste land, part of which will no doubt be brought under cultivation; we may estimate therefore that the revenue under the settlement will be about Rs. 9,000 in excess of the average amount of the last ten years' collections.

“ This settlement made by Major Francis is highly satisfactory, and I would recommend its being sanctioned at an early date.”

3. The discontinuance of the fee levied by the Hubshee on boats, would of course be a benefit to our districts, but I concur with Major Francis and the Acting Collector in thinking, that a reference to the Hubshee would be of no use, and it is therefore better to make a road to connect Tulleh with the Mahableschwur road. The question whether such a road can be made at a moderate cost is now under the consideration of Major Francis, whose report may be awaited.

*Vide paragraph 5 of Major Francis' Report.*

4. In paragraph 8 Major Francis describes the grouping of the villages of the district and his reasons for adding two annas to the scale of classification. These arrangements have my full approval, as correcting the tendency of the Survey system of classification to

lower the good soils in comparison with the poorer. The rates of assessment range from Rs. 8-7-0 to 5-10-0 for rice.

5. The Rubbee is pitched at one rupee per acre as in the Nizam-poor petta of the same district assessed last year. The Warkus rates are four annas for ordinary villages, and three annas for jungly villages.

6. Though the result of the revision shows a decrease of Rs. 14,961 as compared with last year's realisations, still the proposed rates are Rs. 5,281 in excess of the average of ten years' collections; and there is a further margin of nearly Rs. 4,000 leviable on the arable waste. The causes are fully explained by Captain Francis.

7. There are increases to the extent of 74 and 80 per cent. respectively in Kondthurra No. 4, and Dywolec Tulleh Petta. No. 90. It is possible that these villages, though fairly assessed, may not be able to bear so sudden a rise, and it may be found advisable to lower the scale for them exceptionally. Major Francis has been requested to keep this in mind when introducing the revised rates.

8. The Khotec villages will be settled on the principles already adopted in Sanksee and Nizam-poor.

9. The Superintendent has also been desired to reserve the future imposition of a cess for roads and education.

10. As the season is well advanced, I have directed Major Francis to commence the introduction of the settlement, in anticipation of the receipt of the orders of the Government.

I have the honour to be,

Sir,

Your most obedient Servant,

B. H. ELLIS,

Revenue Commissioner, N.E.

*Surat Districts, Camp Behara,*

*1st April 1863.*

No. 54 of 1863.

From Major J. T. FRANCIS,  
Superintendent Revenue Survey and Assessment,  
Tanna and Rutnagherry.

To F. F. ARBUTHNOT, Esq.,  
Acting Sub-Collector, Colaba.

Sir,—I have the honour to submit a report upon the revision of the Assessment of the Mamlutdar's and Tulleh Mahalkurree's Divisions of the Rajpooree Talooka.

2. The Talooka, as you are aware, is divided into three divisions. The eastern portion of it, comprising the Nizampoor Petta, was brought under the Survey settlement last year. My present proposals which embrace the remaining part of the talooka, comprise a tract of country of about 315 square miles in extent, varying from 20 to 22 miles in length from north to south, and from 12 to 18 in breadth from east to west. The whole may be said to represent an irregular parallelogram, the eastern side of which is formed by the Nizampoor division, and the western by the territories of the Hubshee State. The Rewdunda creek forms the northern boundary for about 10 or 12 miles, or to within a short distance of the chief town of Roha, near which a narrow strip of land projects northward for a distance of 5 or 6 miles to a point where the boundaries of the Alibaug, Nagotna, and of this district, all meet. From the latter point the boundary runs along the summit of a range of hills, skirting the fort of Outchitgur, and extending eastwards to Soorghur, where again it touches the Punt Sucheo's country, and then joins the Nizampoor division. The Hubshee territory overlaps the Tulleh division on the south up to the point where the latter joins the Ryghur Talooka, which then forms the boundary on that side.

3. It will be seen from the Map accompanying that the tract of country under report contains a number of detached hills interspersed over the face of the country. The latter present a serious



impediment to traffic, for, if we except the valley in which the town of Roha is situated, and that through which the Mahableshwur and Mhar road runs, there is no other part of the district which is fitted for cart traffic. Roads already exist through the valley abovementioned, and I was hopeful of being able to propose the formation of a branch road from Tulleh to the Mahableshwur road, by which means the latter town would be put in communication with the markets of Mhar and Roha. But my Assistant, Mr. Hexton, represents the country to be too rough and undulating to admit of the construction of this contemplated junction road at a reasonable cost. I propose looking at the line when making the settlement of the district, and will afterwards report the result of my examination.

4. But these hills which make the country unfitted for cart traffic are the main source of its fertility, as their drainage furnishes an abundant supply of water for the rice crops in the valleys. The soil of some of the latter is particularly fertile. That of the Roha valley is so to a remarkable degree, and this, coupled with the circumstance of the copious supply of water which the drainage and the springs from the hills in that locality supply, makes this valley remarkably favourable for the growth of rice. The rice lands of part of the Tulleh Mahal are also very good.

5. The district is rather favourably circumstanced in regard to market. Roha, which is situated on the Rewdunda creek, is a great depôt for rice. It is collected here and then transported by boats to Bombay, and a small quantity also goes to the ports on the Rutnagherry coast. Tulleh has a bazar of its own, and a bunder three or four miles distant, at Maundar on the Junjeera creek. I am informed, however, that the authorities of the Hubshee State levy a fee on boats passing up the above creek, which the Tulleh people represent to be a source of some little annoyance to them, and a considerable disadvantage to this otherwise favourable outlet for their produce. It would be a considerable advantage to this part of the district, were some arrangement made with the authorities of that State for the discontinuance of the levy of the fee said to be collected, but knowing how averse the State is to enter into any arrangement with our Government, I am afraid there would be no good in mootng the

question. Part of the rice of the Tulleh division goes to Goregaum in the Ryghur talooka, where there is a bunder and a small bazar.

6. The two divisions\* contain 238 villages, of which (7) seven are Inam holdings. The revenues of one of the latter are partially alienated, but as its annual jumma bundee is made by your department, it comes under the operation of the settlement.

*Division. . . .	134
Tulleh do ..	104
	<hr/>
	238

There are therefore 232 villages to which the new rates will apply ; but nine villages of the Tulleh division under Government management, the rest being held on the khotee tenure, and about two-fifths of those of the Mamlutdar's division are also held on that tenure. The whole are at present assessed at a grain rent commuted into a cash payment at a certain rate, fixed usually according to the price of grain in the markets of the district.

7. From the circumstances stated in the preceding paragraphs, it will be evident that the district we are assessing possesses natural advantages of a marked character, whilst for the transport and sale of its produce it may be said to be favourably circumstanced on the whole. Due allowance has been made for these advantages in fixing my rates, which are higher than those introduced into any other part of the Sub-Collectorate, with the exception of a few villages (formerly under the Oondehree talooka) situated on and near the coast part of that district, facing the Bombay harbour. The rate was Rs. 7½ in the latter case, which is what I proposed for the best villages of these divisions. It is true that the Rajpooree villages are not so favourably situated with regard to markets, as those of Oondehree, but their rice lands, as before explained, are noted for their fertility. As much as three candies per acre is said to be grown occasionally on some of the very best fields, and two is an ordinary crop for them. If we assume the latter to be their average crop, the produce of an acre will be worth about Rs. 50, as the best kinds of rice have been selling at fully Rs. 25 per candy lately, and are not likely, I think, to fall below that price.

8. There are however, only a few of the best villages lying in a circle of about five miles of the town of Roha, to which I would apply the rate of 7½. The remaining part of the district I have appor-

tioned into three main groups, the whole of the villages being classified in the manner explained in the following statement :—

Group.	No. of Villages.	Rate.	Character, position, and peculiarities of the Villages of each group.
1	30	7½	Rice lands very fertile : villages within a circle of 5 miles of the town of Roha.
2	64	7	Lands very fertile, but villages distant from 6 to 10 miles from Roha. The villages round the town of Tulleh and along the borders of the Rewdunda and Junjeera creeks are also included in the group.
3	81	6½ & 6	East of the preceding and situated for most part in the centre of the district.
4	40	5½ & 5	The most easterly villages adjoining the Nizam-poor Division and jungly villages. Distant from market and difficult of access.
5	2	4	
Total ..	217		
Add ..	12	..	Khara pot villages assessed at Rs. 5 and 4½ per acre.
„	3	..	Villages of two of which the whole lands are submerged and in consequence were not measured or classed, and the other consists of merely the village site.
	232		Grand Total.

9. It will be seen from the foregoing statement that, for the two latter groups, two classes of rates have been fixed, that is to say, I have made use of an intermediate rate of half-a-rupee more than that of the proper maximum of the group, and half-a-rupee less than that of the preceding group. This plan, which was first adopted in assessing Bassein last year, enables me to make a more equitable dis-

tribution of the assessment, as by applying the respective intermediate rates to villages adjoining their preceding groups, there is a difference of only half-a-rupee in the rates of villages thus situated. I have stated the maximum rate to be  $7\frac{1}{2}$ , but it is eight and seven annas in reality, for two annas per rupee has been added to the rate of first class fields in each group, in other words the district has been classed on a rupee two annas instead of a rupee scale.

10. This change of system was adopted in order that the rates of the good soils might be raised without a corresponding increase to those of the lower classes. For instance, the rate of a field classed at one rupee two annas amounts to Rs. 8-7-0, if calculated at a rate of  $7\frac{1}{2}$ , whilst the rate of a field classed at eight annas will be Rs. 3-12-0. But if a rupee valuation scale had been adopted, it would have been necessary to make  $8\frac{1}{2}$  the multiplier to make the rate up to *that sum* for a first class or 16 annas field, and the eight annas field by that plan of calculating its rate, would be assessed at Rs. 4-4-0, or half-a-rupee per acre more than in the example given above. It will be seen from this, that by adopting this plan of operation, I am enabled to put a proportionately higher rate on the good soils which are unusually fertile in this district, without adding to the value assigned to the inferior lands, under the usual classification scale.

11. The maximum rates then of each group are as follows :—

	Rs.	a.	Rs.	a.	
Group 1st.—	8	7			The multiplier being $7\frac{1}{2}$ as given in paragraph 8.
Do. 2nd—	7	14			ditto 7 rupees
Do. 3rd—	7	5 and	6	12	ditto $6\frac{1}{2}$ and 6 do.
Do. 4th—	6	3 and	5	10	ditto $5\frac{1}{2}$ and 5 do.

I feel confident that this plan of operations will be found well suited to the circumstances of a district like this, in which the better descriptions of soil are so remarkably fertile.

12. For Rubbee lands I propose a maximum rate of a rupee. I found this rate was quite high enough for this description of land in the Nizampoor Petta, and there is nothing to make the Rubbee of this district more valuable than that of the former.

13. There is a considerable extent of Wurkus cultivation in some of the hilly villages of the south bordering on the Hubshee State. The cultivation, however, is not more than ordinarily valuable, and as there is no market for grass in the district, I have adopted my usual Wurkus rates of four annas for ordinary villages, and three for jungly ones, both of which will be applicable in this case.

14. The following statement shows the assessment of the district under the rates explained in the preceding paragraphs :—

Name of Division.	Assessment on Cultivation.				Assessment of Waste land.				
	Rice.	Rub- bee.	Wurkus.	Total.	Rice.	Rub- bee.	Wurkus	Total.	Grand Total.
Division ....	86,659	451	4,411	91,521	2,390	183	1,036	3,609	95,130
Tulleh Petta..	55,574	406	6,937	62,917	239	4	106	349	63,266
Total..	1,42,233	857	11,348	1,54,438	2,629	187	1,142	3,958	1,58,396

The proposed rates will effect a reduction of Rs. 14,961 on the revenue realised last year, as will be seen from the following statement :—

#### MAMLUTDAR'S DIVISION.

	Rice.	Rubbee.	Wurkus.	Total.
Last year's collection ..	99,181	504	5,475	1,05,160
Survey assessment....	86,659	451	4,411	91,521
Increase .....	..	..	..	..
Decrease.....	12,522	53	1,064	13,639

#### TULLEH PETTA.

	Rice.	Rubbee.	Wurkus.	Total.
Last year's collection ..	55,728	308	8,000	64,036
Survey assessment....	55,574	406	6,937	62,917
Increase .....	..	98	..	..
Decrease .....	154	..	1,063	1,119





15. Last, year however, which has been taken as the standard of comparison in the foregoing statements, was a year of high collections, for it will be seen from the Diagram that there were about Rs. 17,000 in excess of the average realisations of the last ten years. There is but one year, moreover, out of the twenty included in the series, given in the Diagram, in which a larger amount of revenue was realised, and that was in 1859-60, when the Tusser rate was fixed at the high sum of Rs. 24 per candy. On referring to the Diagram you will observe that the effect of this high rate is strikingly illustrated by the column indicating the collections of the year, which stands out in bold relief at the height of about Rs. 20,000 above the collections of any other year; and if you will refer back to a period of five years anterior to the year abovementioned, and compare the realisations of 1854-55 with those of 1859-60, you will observe that there is a difference of between 90 and 100 per cent in the amount of revenue realised in the respective years; and this is all the result of the different Tusser rates of the two years, for there is no perceptible increase or decrease in the cultivation exhibited in their respective returns under that head.

16. In judging, therefore, of the rates now proposed for this district, it must be borne in mind, that the Revenue has been increasing annually under this grain commutation system in a proportionate ratio to the rise in the price of grain. In a district, however, with a fixed cash rent, the case is different. In such cases the revenue is stationary, supposing cultivation to be so, and the gain from a rise of prices all goes into the pocket of the cultivator, whilst under the former system, Government should derive its fair share of gain from any rise in the value of agricultural produce. Applying this principle to the present case, it would followed that the revenue realised during the last two or three years represents what the district can pay at present prices. But the quantity of grain fixed as the rent of the land is so large a proportion of the yield, being 10 maunds per beegha in many villages of the Mamlutdar's division, that we cannot be guided by prices to the extent above indicated in fixing our new assessment.

17. Considering these circumstances so materially affecting the Revenue collections of this district, we must be careful not to attach



undue importance to the amount actually realised. We may confidently assume that the district cannot pay the large revenue realised from it in 1859-60, whilst the average collections of the past ten years are perhaps rather low, as they include several years\* in which the amount collected was certainly less than what the district can now pay. It will be seen from the figures in the margin, that the assessment by proposed rates fulfils

Survey assessment on cultivated area. . 1,54,438  
Average of past collections .. 1,49,157  

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5,281

these conditions, for, calculated on the present cultivated area alone, it is a little more than Rs. 5,000 in excess of our average collections for the period abovementioned. There is a further sum of Rs. 3,958, comprising the assessment of waste lands, part of which will no doubt be brought under cultivation. We may estimate, therefore, that the revenue under the settlement will be about Rs. 9,000 in excess of the average amount of the last ten years' collections.

18. On referring to the statement in paragraph 14, it will be seen that the *reduction* therein shown occurs chiefly in the Mamlutdar's division. The result as regards both divisions is as follows:—

	Mamlutdar's Division.	Tulleh Petta.	Total. .
Total collections under all heads in 1861-62 .....	1,05,160	64,036	1,69,196
Survey assessment on calculated area ..	91,521	62,917	1,54,438
Decrease..	13,639	1,119	14,758

19. The small difference in the two assessments in the case of the Tulleh Petta is owing to the large extent of new rice land which has been brought to account in that division by the survey measurement. There are many villages in which the new measurements are four and five times in excess of the area recorded under the former survey. This excess of land has hitherto been held free of assessment

as the year's revenue has been calculated upon the area by the old survey. In the Mamlutdar's division the increase or the difference in the area of the two surveys is much less. But whatever increase of assessment may be due to this cause, is of course a legitimate levy, and the circumstance is mentioned merely for the purpose of showing the reason why there is such a disproportionate difference in the result of the settlement in the two divisions.

Mr London,  
Captain Hobson,  
Mr. Hearn,  
Mr. Hughes,  
Mr. Hathway,  
Captain Taverner.

20. The measurement of the district was made in the seasons of 1855-56-57-58, under the supervision of the several Assistants named in the margin, and the result of their test is embodied in the statement appended.

21. The classification was executed under Mr. Hexton's supervision, chiefly during the past season. The work of 10 villages, however, has been done during the present season, and in consequence I have been unable to furnish the statement of test for those villages. Mr. Hexton's test is given in the appendices. His known character, as a classing officer, is of itself a sufficient guarantee of the correctness of the work.

22. I propose settling the Khotee villages on the plan already introduced into the Nagotna and Nizampoor districts, with such modifications as the circumstances of these divisions may seem to require: the result of my proceedings shall be duly reported.

23. I would beg an early consideration of this question, as I have made arrangements for commencing the jumma bundee of the district early in the month of February.

24. Provision will be made for the levy of a local improvement tax of one anna per rupee, should Government desire to impose it.

I have the honour to be, &c.

(Signed) J. FRANCIS, Major,

Superintendent Revenue Survey and Assessment,  
*Sind Districts, 2nd January 1863.* Tanna and Rutnagherry.

(True Copy.)

W. WADDINGTON, Captain,

In charge Revenue Survey and Assessment,  
Tanna and Rutnagherry.

## STATEMENT contrasting the Survey Settlement with past payments for the

Number.	NAMES OF VILLAGES.	Last Payments.					Rate.
		Taken on the Average for 10 years.	According to Jumma-bundee.				
			Rice.	Rubbee.	Wurkus.	Total.	
1	2	3	4	5	6	7	8
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1	Kolar .....	1,444	1,735	16	99	1,850	7
2	Pooee .....	688	796	14	20	830	7
3	Poogaum .....	1,971	2,333	55	16	2,404	7
4	Wudalee Boodrook .....	376	454	..	4	458	7
5	Dole Mahal .....	475	563	..	28	591	7
6	Acen Mahal .....	78	80	..	61	141	5
7	Soorghur.....	69	72	1	58	131	5
8	Wyjunath .....	166	182	..	2	184	6½
9	Khamb .....	1,481	1,742	1	31	1,804	7
10	Talowlee .....	734	761	..	5	766	7
11	Gowch .....	771	881	..	36	917	7
12	Bahay .....	743	832	45	28	905	7
13	Chilay .....	1,345	1,638	4	10	1,652	7½
14	Dhankajay .....	1,681	1,946	23	24	1,993	7½
15	Deokaway .....	1,989	2,358	35	35	2,428	7½

*Villages of the MAMLUTDAR'S DIVISION of the RAJPOOREE TALOOKA.*

Assessment according to proposed Survey Rates.									
On the Cultivation of				On Waste lands.				Total on Cultivation and Waste.	Remarks.
Rice.	Rubbee.	Wurkus.	Total.	Rice.	Rubbee.	Wurkus.	Total.		
9	10	11	12	13	14	15	16	17	
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1,865	4	172	2,044	..	..	..	..	2,044	
	3								
917	14	31	968	..	..	..	..	968	
	6								
1,764	18	24	1,806	122	7	41	170	1,976	
364	..	3	367	14	1	11	26	393	
436	..	14	450	16	..	..	16	466	
150	2	56	208	..	..	..	..	208	
80	..	38	118	..	..	..	..	118	
156	1	7	164	..	..	..	..	164	
1,617	..	24	1,641	7	..	5	12	1,653	
836	..	8	844	35	12	15	62	906	
749	4	35	788	98	..	12	110	898	
567	24	35	634	168	31	25	224	858	
	8								
1,305	..	25	1,330	75	..	..	75	1,405	
1,687	5	13	1,705	157	16	30	203	1,908	
2,021	30	9	2,060	33	..	28	61	2,121	

Number.	NAMES OF VILLAGES.	Last Payments.					Rate.
		Taken on the Average for 10 years.	According to Jumma-bundee.				
			Rice.	Rubbee.	Wurkus.	Total.	
1	2	3	4	5	6	7	8
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
16	Oordownay.....	287	331	3	2	336	7
17	Sangreh .....	394	440	4	9	453	7
18	Mootowlee Khoord .....	319	336	..	7	343	7
19	Malsaw .....	518	530	..	8	538	7
20	Dhamansae .....	1,288	1,588	5	82	1,675	7
21	Songaon .....	666	854	2	12	868	7
22	Pingalsace Boodrook ....	562	465	17	6	488	7
23	Sewshet .....	5	5	..	..	5	7
24	Wandolee .....	489	598	..	12	610	7½
25	Wudalee Khoord .....	282	306	..	3	309	7½
26	Pingalsace Khoord .....	1,423	1,661	11	6	1,678	7
27	Kusba Astumee .....	1,448	1,197	11	2	1,210	7
28	Jooce .....	41	47	3	..	50	6
29	Padoom .....	863	945	6	11	962	7½
30	Khar Aptee .....	147	152	..	1	153	7
31	Nirce ....	996	1,174	..	9	1,183	7½

## Assessment according to proposed Survey Rates.

On the Cultivation of				On Waste lands.				Total on Cultivation and Waste.	Remarks.
Rice.	Rubber.	Wurkus.	Total.	Rice.	Rubber.	Wurkus.	Total.		
9	10	11	12	13	14	15	16	17	
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
411	11	22	462	..	..	..	..	462	
318	18	9	329	112	5	7	124	453	
395	..	1	399	61	..	10	71	470	
645	..	6	651	13	..	4	17	668	
1,305	6	26	1,337	35	..	40	75	1,412	
686	6	6	698	25	..	8	43	741	
385	10	10	405	322	..	19	341	746	
21	..	..	21	..	..	..	..	21	
487	..	6	493	60	..	5	65	558	
315	..	1	316	..	..	3	3	319	
1,690	8	19	1,717	..	..	..	..	1,717	
1,330	6	16	1,352	66	10	17	93	1,445	
114	2	2	118	..	..	..	..	118	
607	2	1	770	7	4	1	12	785	
160	..	..	160	..	..	..	..	160	
126	..	..	126	13	..	..	13	156	
17	..	..	17	..	..	..	..	17	
930	..	13	943	15	..	..	15	958	

Number.	NAMES OF VILLAGES.	Last Payments.					Rate.
		Taken on the Average for 10 years.	According to Jumma-bundee.				
			Rice.	Rubbee.	Wurkus.	Total.	
1	2	3	4	5	6	7	8
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
32	Owchitghur .....	92	97	..	6	103	7
33	Nigreh .....	1,213	1,279	..	8	1,287	7½
34	Medheh .....	..	..	..	11	11	..
35	Rewallee .....	1,510	1,731	..	63	1,794	7
36	Bhecsay .....	1,263	1,366	..	63	1,429	7
37	Pophulgar .....	211	245	..	4	249	7
38	Paleba .....	1,449	1,577	..	18	1,595	7½
39	Warwandelh .....	642	745	..	18	763	7½
40	Bhatsacc .....	1,706	1986	3	53	2,042	7½
41	Jholamba .....	998	1,030	..	1	1,031	5
42	Shenwace .....	1,644	1,920	1	154	2,075	7½
43	Wowa Potga .....	216	250	..	131	381	6
44	Murowlee .....	1,206	1,439	1	9	1,449	7
45	Mootowlee Boodrook ....	1,232	1,474	5	9	1,488	7
46	Shirowlee .....	171	191	1	..	192	7½
47	Ambewarrec .....	385	456	..	13	469	7½

Assessment according to proposed Survey Rates.									Remarks.
On the Cultivation of				On Waste lands.				Total on Cultivation and Waste.	
Rice.	Rubbee.	Wurkus.	Total.	Rice.	Rubbee.	Wurkus.	Total.		
9	10	11	12	13	14	15	16		
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
126	..	5	131	..	..	14	14	145	
1,215	2	10	1,227	..	..	1	1	1,228	
..	..	..	..	..	..	..	..	..	
1,694	..	40	1,734	..	..	..	..	1,734	
1,841	..	21	1,862	..	..	..	..	1,862	
217	..	8	225	..	..	..	..	225	
1,401	..	9	1,410	22	..	13	35	1,445	
570	..	6	576	18	..	13	31	607	
1,762	..	5	1,767	41	..	70	111	1,878	
940	1	7	948	15	..	..	15	963	
1,324	..	128	1,644	..	..	..	..	1,644	
192	..	..	..	..	..	..	..	..	
258	..	58	361	..	..	..	..	361	
45	..	..	..	..	..	..	..	..	
1,260	..	12	1,272	56	..	2	58	1,330	
1,015	8	15	1,038	35	..	..	35	1,073	
135	..	1	136	..	..	..	..	136	
330	..	10	340	..	..	5	5	345	



No.	NAMES OF VILLAGES.	Last Payments.					Rate.
		Taken on the Average for 10 years.	According to Jumrahundee.				
			Rs.	Rub' s.	Wankas.	Total.	
1	2	3	4	5	6	7	8
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
48	Paleh Boodrook .....	496	584	..	18	602	7½
49	Sambweh .....	1,020	1,170	..	36	1,206	7½
50	Paleh Khoord.....	718	851	..	65	916	7½
51	Karewnch .....	618	73	..	66	139	6
52	Killeh .....	2,457	2,324	13	73	2,910	7½
53	Dhatow .....	2,777	3,265	100	46	3,411	7½
54	Washee .....	1,126	1,510	3	71	1,414	7½
55	Landar .....	818	999	13	85	1,097	7
56	Bhorgar .....	529	693	2	54	659	7½
57	Talaghur.....	746	836	..	23	859	7½
58	Rotay Boodrook .....	619	716	27	7	750	7
59	Rotay Khoord .....	560	635	..	4	639	7
60	Warsch .....	972	1,098	..	40	1,138	7½
61	Goorowlee .....	321	361	..	2	363	7
62	Nivee .....	959	1,082	7	55	1,144	7
63	Bheowneechwar.....	718	815	11	1	827	7

Assessment according to proposed Survey Rates.									
On the Cultivation of				On Waste lands.				Total on Cultivation and Waste.	Rema
Rice.	Rubbee.	Wurkus.	Total	Rice.	Rubbee.	Wurkus.	Total		
9	10	11	12	13	14	15	16	17	18
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
461	..	7	468	4	..	16	20	488	
904	..	25	929	7	..	19	26	955	
645	..	30	675	..	..	..	..	675	
60	..	64	124	..	..	..	..	124	
2,512	24	42	2,578	105	74	33	212	2,790	
2,831	71	67	2,969	131	19	6	156	3,125	
1,125	11	31	1,167	..	..	..	..	1,167	
997	11	85	1,093	..	..	..	..	1,093	
521	3	32	556	..	..	..	..	556	
779	..	33	812	..	..	..	..	812	
619	19 3	12	653	45	3	6	54	707	
616	..	20	636	3	..	..	3	639	
832	..	26	858	125	..	4	139	997	
336	..	13	349	..	..	..	..	349	
1,050	6	86	1,142	..	..	..	..	1,142	
833	28	19	880	..	..	..	..	880	

Number.	NAMES OF VILLAGES	Last Payments.					Rate.
		Taken on the Average for 10 years.	According to Jumma bundee.				
			Rice.	Rubbee.	Wurkus.	Total.	
1	2	3	4	5	6	7	8
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
64	Rohay .....	2,088	2,331	..	142	2,473	7½
65	Kharee .....	356	402	..	13	415	7½
66	Tarchghur .....	929	1,054	..	93	1,147	7½
67	Khurgaon .....	979	1,126	..	31	1,157	7½
68	Arch Khoord .....	436	503	..	24	527	7½
69	Arch Boodrook .....	694	811	..	80	891	7½
70	Koombhosce Khar.....	110	148	..	..	148	0
71	Shersaee .....	743	826	..	217	1,043	7½
72	Bhagirthce Khar .....	3	11	..	..	11	0
73	Gunesh Khar .....	4	..	..	..	..	0
74	Mahadeo Khar .....	307	299	..	1	300	0
75	Tulowlee.....	205	220	..	36	256	6
76	Oosur .....	371	421	..	90	511	6
77	Phunsarey .....	5	5	..	18	23	5
78	Shenvecra .....	3	36	..	14	50	5
79	Tambree .....	623	711	1	212	924	6

## Assessment according to proposed Survey Rates.

On the Collection of				On Waste lands.				Total on Cultivation and Waste.	Remarks
Rice.	Rubbee.	Wurkus.	Total.	Rice.	Rubbee.	Wurkus.	Total.		
9	10	11	12	13	14	15	16	17	18
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
2,104	1	115	2,225	..	..	..	..	2,225	
5									
292	..	5	297	..	..	..	..	297	
806	..	21	827	7	..	75	82	909	
497	..	5	812	7	..	13	25	837	
310				5					
379	..	16	400	22	..	25	52	452	
5				5					
671	..	22	693	15	..	50	85	778	
0				20					
0	..	..	110	..	..	..	..	110	
110									
577	..	176	773	..	..	..	..	773	
20									
0	..	..	65	..	..	..	..	65	
65									
0	..	..	32	..	..	..	..	32	
32									
0	..	..	360	..	..	..	..	360	
360									
150	..	8	158	33	..	30	63	221	
318	..	24	342	42	..	90	132	474	
10	..	14	24	..	..	..	..	24	
42	1	32	75	..	..	..	..	75	
666	..	204	870	..	..	..	..	870	

Number.	NAMES OF VILLAGES.	Last Payments.					Rate.
		Taken on the Average for 10 years.	According to Jummabundee.				
			Rice.	Rulbee.	Wurkus.	Total.	
1	2	3	4	5	6	7	8
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
80	Tamunshet .....	236	291	..	93	384	5
81	Kalumshet .....	152	169	..	25	194	6
82	Ghosalay .....	2,748	3,103	4	169	3,276	6½
83	Kelghur .....	229	217	..	35	282	5½
84	Kantee .....	42	47	..	84	131	4
85	Gopalwat .....	40	40	..	65	105	4
86	Bhalgaon .....	937	1,019	..	221	1,240	6
87	Kandunch Khoord .....	207	240	..	87	327	6
88	Kandunch Boodrook .....	300	319	..	48	397	5
89	Oochaily .....	320	355	..	57	412	6
90	Moochunay .....	630	723	..	96	819	5
91	Verjolee .....	1,050	1,148	11	108	1,267	6½
92	Moogteh .....	233	261	..	113	374	6
93	Hal .....	362	425	3	71	499	6½
94	Narlee .....	68	78	..	54	132	5
95	Kamberch .....	1,211	1,294	..	19	1,330	7

Assessment according to proposed Survey Rates.									Remarks.
On the Collection of				On Waste lands.				Total on Cultivation and Waste.	
Rice.	Rubbee.	Wurkus.	Total.	Rice.	Rubbee.	Wurkus.	Total.		
9	10	11	12	13	14	15	16	17	18
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
255	..	109	364	..	..	..	..	364	
111	..	39	150	..	..	..	..	150	
2,462	1	122	2,585	10	..	59	69	2,654	
263	..	57	420	..	..	..	..	420	
68	3	75	146	..	..	..	..	146	
38	..	55	93	..	..	..	..	93	
951	6	184	1,141	..	..	..	..	1,144	
171	..	38	219	..	..	..	..	219	
10	..	35	303	..	..	..	..	303	
258	..	35	303	..	..	..	..	303	
10	..	67	390	..	..	..	..	390	
318	..	67	390	..	..	..	..	390	
5	..	81	665	..	..	..	..	665	
584	..	81	665	..	..	..	..	665	
1026	..	106	1,154	..	..	..	..	1,154	
22	..	91	301	..	..	..	..	301	
210	..	91	301	..	..	..	..	301	
344	..	48	442	..	..	..	..	442	
50	..	41	156	..	..	..	..	156	
115	..	41	156	..	..	..	..	156	
1,148	1	49	1,198	..	..	..	..	1,198	

Number.	NAMES OF VILLAGES.	Last Payments.					Rate.
		Taken on the Average for 10 years.	According to Jumma-bundee.				
			Rice.	Rubbee.	Wurkus.	Total.	
1	2	3	4	5	6	7	8
		Rs.	P.s.	Rs.	Rs.	Rs.	Rs.
96	Tembghur .....	406	442	..	85	527	6
97	Salaodeh .....	82	84	..	16	100	7
98	Boburghur .....	341	376	..	19	395	7
99	Muhsarree .....	77	39	..	262	301	5
100	Nundrep .....	583	655	1	105	761	7
101	Khandar .....	651	749	..	121	870	7
102	Nyshet .....	346	414	..	9	423	7
103	Soorkolee .....	478	565	1	18	584	7
104	Chuneray .....	397	442	7	1	450	7
105	Koolat .....	272	304	1	4	309	6½
106	Rajeh .....	151	186	1	2	189	7
107	Sarsolee .....	932	1,100	..	64	1,164	7
108	Khyralch .....	1,114	1,271	1	77	1,349	7
109	Shilosce .....	1,048	1,166	..	48	1,214	7
110	Ladowlee .....	1,146	1,291	..	27	1,318	7
111	Dhahiolee .....	395	456	8	10	474	6½

Assessment according to proposed Survey Rates.										Remarks.
On the Cultivation of				On Waste lands.				Total on Cultivation and Waste.		
Rice.	Rubbee.	Wurkus.	Total.	Rice.	Rubbee.	Wurkus.	Total.			
9	10	11	12	13	14	15	16	17	18	
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.		
339	1	96	436	..	..	..	..	436		
77	..	24	101	..	..	..	..	101		
287	2	18	307	..	..	..	..	307		
27	..	1	28	33	..	174	207	235		
467	7	79	553	..	..	..	..	553		
562	..	91	653	..	..	..	..	653		
308	..	8	316	3	..	2	5	321		
387	1 15	11	414	21	1	2	24	438		
381	1	5	387	..	..	..	..	387		
305	11	10	326	..	..	..	..	326		
119	1	5	125	..	..	..	..	125		
953	1	21	975	7	..	30	37	1,012		
1,183	..	54	1,237	..	..	..	..	1,237		
1,029	..	38	1,067	..	..	..	..	1,067		
1,123	..	48	1,171	..	..	..	..	1,171		
422	..	11	433	..	..	..	..	433		



Number.	NAMES OF VILLAGES.	Last Payments.					Rate.
		Taken on the Average for 10 years.	According to Jummabundee.				
			Rice.	Rubbee.	Warkus.	Total.	
1	2	3	4	5	6	7	8
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
112	Kokumbun .....	1,322	1,490	..	92	1,582	7
113	Khope .....	593	661	1	8	670	7
114	Deway .....	163	184	..	12	190	6
115	Mahavey .....	936	1,072	3	93	1,168	7
116	Moraleh .....	239	274	..	37	311	5
117	Mahlooaga .....	396	440	..	18	458	7
118	Chandgaum .....	1,344	1,514	9	34	1,557	7
119	Kyreh Khoord .....	414	436	3	2	441	7
120	Tuloreh .....	578	660	..	36	696	7
121	Pophulveera .....	88	98	..	51	149	7
122	Pangolee .....	348	396	..	49	445	7
123	Birwarce .....	2,916	2,393	5	19	2,417	7
124	Khar Kherdee .....	114	117	..	..	117	5
125	Beikhar .....	130	149	..	..	149	5
126	Dondkhar .....	293	330	..	..	330	5
127	Chinch Khar .....	54	54	..	..	54	5

## Assessment according to proposed Survey Rates.

On the Cultivation of				On Waste lands.				Total on Cultivation and Waste.	Remarks
Rice.	Rubber.	Wurkus.	Total.	Rice.	Rubber.	Wurkus.	Total.		
9	10	11	12	13	14	15	16	17	18
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1,078	..	61	1,139	..	..	..	..	1,139	
518	..	14	532	..	..	..	..	532	
111	..	7	126	..	..	..	..	126	
901	1	68	982	..	..	..	..	982	
292	..	29	231	..	..	..	..	231	
364	..	39	403	..	..	..	..	403	
1,188	63	64	1,261	..	..	..	..	1,261	
365	..	4	369	..	..	..	..	369	
531	..	44	575	..	..	..	..	575	
122	..	40	162	..	..	..	..	162	
371	..	51	422	..	..	..	..	422	
1,737	101	63	1,811	..	..	..	..	1,811	
160	..	..	160	..	..	..	..	160	
135	..	..	135	..	..	..	..	135	
142	..	..	142	..	..	..	..	142	
165	..	..	165	..	..	..	..	165	

Number.	NAMES OF VILLAGES.	Last Payments.					Rate.
		Taken on the Average for 10 years.	According to Jummabundoo.				
			Rice.	Rubbee.	Wurkus.	Total.	
1	2	3	4	5	6	7	8
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
128	Soa Khar.....	189	217	1	3	221	5
129	Nao Khar .....	124	120	..	..	120	4½
130	Vithal Khar .....	..	..	..	2	2	..
131	Parungee Khar .....	..	..	..	..	..	..
132	Mahadeo Khar .....	280	273	....	1	274	5
	Total.....	86,993	99,181	504	5,475	1,05,160	..

Assessment according to proposed rates.									Remarks.
On the Cultivation of				On Waste lands.				Total on Cultivation and Waste.	
Rice.	Rubbee.	Wurkus.	Total.	Rice.	Rubbee.	Wurkus.	Total.		
9	10	11	12	13	14	15	16	17	18
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
180	..	6	186	..	..	..	..	186	
47	..	..	47	79	..	..	79	126	
..	..	..	..	..	..	..	..	..	
..	..	..	..	..	..	..	..	..	
510	..	..	510	..	..	..	..	510	
86,659	451	4,411	91,521	2,390	183	1,036	3,609	95,130	

(Signed) J. FRANCIS, Major,  
Superintendent Revenue Survey and Assessment,  
Tanna and Rutnagherry.

(True Copy)  
W. WADDINGTON, Captain,  
In charge Revenue Survey and Assessment,  
Tanna and Rutnagherry.

## STATEMENT contrasting the Survey Settlement with past

Num. r.	NAMES OF VILLAGES.	Last Payments.					Rate.
		Taken on the Average for 10 years.	According to Jummabandec.				
			Rice.	Rubbee.	Warkus.	Total.	
1	2	3	4	5	6	7	8
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
	1 Kusba Tulloh .....	1,914	2,143	..	221	2,364	7
	2 Merch .....	1,019	1,128	..	350	1,478	6
	3 Pudwan .....	462	514	..	170	634	6
	4 Kondthurra .....	138	154	..	28	182	6
	5 Tokurda ... ..	236	266	..	49	315	6
	6 Malatch .....	853	898	..	162	1,061	6
	7 Giruch .....	680	761	..	66	827	6
	8 Nanowlee .....	194	220	..	37	257	6
	9 Rahtar :.....	1,264	1,443	..	227	1,670	7
	10 Shenowlee .....	485	552	..	91	643	7
	11 Kambowlee .....	269	298	..	136	434	7
	12 Taruch .....	202	229	..	51	280	7
	13 Bamunsacc .....	22	24	..	..	24	7
	14 Shenatch.....	108	122	..	44	166	6
	15 Peetsacc.....	264	295	..	187	482	6

[illegible]

Number.	NAMES OF VILLAGES.	Last Payments.					Rate.
		Taken on the Average for 10 years.	According to Jumma bundee.				
			Rice.	Rubbee.	Wurkus.	Total.	
1	2	3	4	5	6	7	8
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
16	Kolveera.....	27	31	..	..	31	6
17	Mandar .....	926	1,046	..	188	1,234	7 4½
18	Kooreh .....	986	1,109	..	112	1,221	7 4½
19	Rowulleh .....	527	591	..	218	809	6
20	Washee Availce.....	361	404	..	119	523	6 4½
21	Wurulee .....	408	459	..	81	540	6 4½
22	Deoshet .....	14	16	..	..	16	6 4½
23	Maggaum .....	219	240	..	162	402	6 4½
24	Tahmunay .....	204	229	..	106	335	6 4½
25	Churowlee .....	68	75	..	87	162	5 4½
26	Kashekhote .....	18	24	..	62	86	5
27	Punchelee .....	147	165	..	121	286	5
28	Malook .....	293	333	..	192	525	5
29	Wanoosteh .....	266	303	..	60	363	6
30	Ambolee.....	422	488	..	37	525	6
31	Kolshec .....	230	257	..	42	299	6

Assessment according to proposed Survey Rates.									Remarks.
On the Collection of				On Waste lands.				Total on Cultivation and Waste.	
Rice.	Rubbee.	Wurkus.	Total.	Rice.	Rubbee.	Wurkus.	Total.		
9	10	11	12	13	14	15	16	17	18
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
30	..	1	31	..	..	..	..	31	
1,018	..	124	1,151	..	..	..	..	1,151	
9	..	73	960	..	..	..	..	960	
882	..	73	960	..	..	..	..	960	
5	..	141	795	..	..	..	..	795	
654	..	141	795	..	..	..	..	795	
416	..	80	500	..	..	..	..	500	
4	..	52	457	..	..	..	..	457	
374	..	52	457	..	..	..	..	457	
31	..	..	19	..	..	..	..	19	
19	..	..	19	..	..	..	..	19	
244	..	90	350	..	..	..	..	350	
16	..	73	299	..	..	..	..	299	
201	..	73	299	..	..	..	..	299	
25	..	74	156	..	..	..	..	156	
82	..	74	156	..	..	..	..	156	
22	..	66	88	..	..	..	..	88	
135	1	91	227	..	..	..	..	227	
375	..	182	557	..	..	..	..	557	
300	..	44	344	..	..	..	..	344	
492	1	36	529	..	..	..	..	529	
213	1	37	251	..	..	..	..	251	



Number.	NAMES OF VILLAGES.	Last Payments.					Rate.
		Taken on the Average for 10 years.	According to Jummabundee.				
			Rice.	Rubbee.	Wurkus.	Total.	
1	2	3	4	5	6	7	8
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
32	Belghur .....	139	155	..	30	185	6
33	Khyratch .....	267	305	6	70	381	6
34	Tambree .....	165	186	..	26	212	6
35	Bamunghur .....	653	732	..	9	741	6½
36	Wawa Availee .....	150	167	..	15	182	6
37	Paheghur .....	108	125	..	31	156	6
38	Arnaleh .....	264	295	..	56	351	6
39	Kulumshet .....	231	261	2	56	319	6
40	Kulsambreh .....	478	540	..	76	616	6
41	Kakurshet .....	242	279	4	171	454	6
42	Sonsareh .....	199	231	1	67	299	6
43	Borghur Availee .....	363	403	..	95	498	6
44	Nigoorshet .....	377	425	3	184	612	5
45	Washee Mahagaon .....	182	207	..	49	256	5½
46	Salshet .....	232	253	..	64	317	5½
47	Mahagaom .....	921	1,064	2	242	1,308	5½

## Assessment according to proposed Survey Rates.

On the Cultivation of				On Waste lands.				Total on Cultivation and Waste.	Remarks.
Rice.	Rubbee.	Wurkus.	Total.	Rice.	Rubbee	Wurkus.	Total.		
9	10	11	12	13	14	15	16		
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
144	..	20	164	..	..	..	..	164	
336	1	58	395	..	..	..	..	395	
144	..	28	172	..	..	..	..	172	
779	..	58	847	..	..	..	..	847	
210	..	55	265	..	..	..	..	265	
126	..	29	155	..	..	..	..	155	
318	..	83	401	..	..	..	..	401	
228	..	46	274	..	..	..	..	274	
498	..	70	568	..	..	..	..	568	
366	..	144	510	..	..	..	..	510	
396	..	55	451	..	..	..	..	451	
582	..	97	679	..	..	..	..	679	
535	..	147	682	..	..	..	..	682	
225	..	70	295	..	..	..	..	295	
255	..	51	306	..	..	..	..	306	
1,039	..	199	1,238	..	..	..	..	1,238	

Number.	NAMES OF VILLAGES.	Last Payments.					Rate.
		Taken on the Average for 10 years.	According to Jummahundee.				
			Rice.	Rabbee.	Wurkus.	Total.	
1	2	3	4	5	6	7	8
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
48	Ketkah .....	51	53	..	17	70	5
49	Mohareh.....	226	240	..	52	292	5
50	Barpeh .....	573	638	..	119	757	5
51	Bhorch .....	1,506	1,801	1	116	1,918	6
52	Tulowlee.....	617	774	..	5	779	6
53	Burusgaon .....	1,754	1,910	6	122	2,038	6
54	Mehtowna .....	149	168	..	12	180	6
55	Teesch .....	778	868	16	34	918	6
56	Gotowrah .....	432	482	1	33	516	6
57	Ratwur .....	1,061	1,276	..	89	1,365	6
58	Wawa Dewalee .....	424	525	..	151	676	5½
59	Patnavah .....	706	779	10	104	893	6
60	Radrowlee .....	544	607	17	36	660	6
61	Tullehshet .....	775	940	..	23	963	6½
62	Magtee .....	620	697	13	46	756	5
63	Mugrolee .....	698	784	7	47	838	6

## Assessment according to proposed Survey Rates.

On the Cultivation of				On Waste lands.				Total on Cultivation and Waste.	Remarks
Rice.	Rubbee.	Wurkus.	Total.	Rice.	Rubbee.	Wurkus.	Total.		
9	10	11	12	13	14	15	16	17	18
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
85	..	17	102	..	..	..	..	102	
330	..	86	416	..	..	..	..	416	
737	..	97	834	..	..	..	..	834	
1,638	1	75	1,714	18	..	21	29	1,753	
623	..	20	643	..	..	..	..	643	
1,801	11	115	1,927	..	..	..	..	1,927	
159	..	8	167	..	..	..	..	167	
920	..	52	972	..	..	..	..	972	
502	..	27	529	..	..	..	..	529	
1,086	..	102	1,188	18	..	..	18	1,206	
867	..	151	1,018	..	..	..	..	1,018	
1,084	4	88	1,176	..	..	..	..	1,176	
582	19	21	622	..	..	..	..	622	
654	4	20	681	18	4	4	26	707	
869	3	53	930	..	..	..	..	930	
729	8	43	779	..	..	..	..	779	

Number.	NAMES OF VILLAGES.	Last Payments.					Rate.
		Taken on the Average for 10 years.	According to Jumma-bundee.				
			Rice.	Rubbee.	Wurkus.	Total.	
1	2	3	4	5	6	7	8
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
64	Nivee .....	553	619	2	71	692	6
65	Mootowlce .....	596	669	..	65	734	6
66	Indapoor.....	900	1,020	..	12	1,032	6½
67	Kohlanch .....	569	640	..	28	668	6
68	Kookheirah.....	368	412	..	18	430	6
69	Kasimbleh .....	392	411	..	27	438	6
70	Oombrowlee .....	630	708	2	19	729	5½
71	Kalumjeh .....	440	494	25	18	537	6
72	Majowlee .....	294	331	2	15	348	5½
73	Soarow .....	809	909	20	20	949	5½
74	Peun .....	1,129	1,259	37	68	1,364	6
75	Bareghur Kurowlee .....	390	423	3	76	502	5½
76	Waruk .....	889	1,027	..	28	1,055	6
77	Ambrowsee.....	630	724	2	91	817	5½
78	Nictneh .....	442	500	6	41	547	5½
79	Borlah.....	529	638	3	18	659	6

## Assessment according to proposed Survey Rates.

On the Cultivation of				On Waste lands.				Total on Cultivation and Waste.	Remarks.
Rice.	Rubbee.	Wurkus.	Total.	Rice.	Rubbee.	Wurkus.	Total.		
9	10	11	12	13	14	15	16	17	18
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
529	..	68	597	..	..	..	..	597	
672	2	54	728	..	..	..	..	728	
833	1	19	853	30	..	8	38	891	
690	..	33	723	..	..	..	..	723	
324	..	16	340	42	..	10	52	392	
513	2	24	539	..	..	..	..	539	
882	..	30	912	..	..	..	..	912	
534	45	18	603	..	..	..	..	603	
371	6	22	393	..	..	..	..	393	
841	93	26	969	..	..	..	..	969	
1,218	9	104	1,325	..	..	..	..	1,325	
462	3	61	526	..	..	..	..	526	
786	..	43	829	78	..	..	78	907	
621	2	89	712	..	..	..	..	712	
484	..	30	514	..	..	..	..	514	
426	11	25	462	..	..	..	..	462	

Number.	NAMES OF VILLAGES.	Last Payments.					Rate.
		Taken on the Average for 10 years.	According to Jumma-bundee.				
			Rice.	Rubbee.	Wurkus.	Total.	
1	2	3	4	5	6	7	8
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
80	Soombleh .....	201	226	2	4	232	5½
81	Rajewlee.....	438	493	26	7	526	6
82	Pachaleh.....	247	284	5	24	313	6
83	Dakshelee .....	186	208	..	25	233	6
84	Dehgaon.....	878	1,002	21	123	1,146	5½
85	Marumbeh .....	1,908	2,159	47	51	2,257	5½
86	Mahpolee .....	340	381	2	61	444	6
87	Dongrowlee .....	65	77	..	116	193	5
88	Vehooleh.....	772	817	7	186	1,010	5½
89	Wawa Mandrag.....	427	488	..	92	580	5½
90	Dywolee .....	144	162	..	33	195	5½
91	Choorae Boodrook .....	579	638	..	66	704	6
92	Oosur Khoord .....	242	283	..	90	373	5½
93	Bhanung.....	408	458	2	113	573	5½
94	Churrace Khoord .....	788	878	1	122	1,001	6
95	Tallehgaom.....	1,286	1,459	3	221	1,683	6

## Assessment according to proposed Survey Rates.

On the Cultivation of				On Waste lands.				Total on Cultivation and Waste.	Remarks.
Rice.	Rubbee.	Wurkus.	Total.	Rice.	Rubbee.	Wurkus.	Total.		
9	10	11	12	13	14	15	16	17	18
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
291	3	9	303	..	..	..	..	303	
348	63	16	427	..	..	..	..	427	
252	11	17	280	..	..	..	..	280	
204	..	17	221	..	..	..	..	221	
982	10	94	1,086	..	..	..	..	1,086	
1,804	66	66	1,936	..	..	..	..	1,936	
345	..	40	385	..	..	..	..	385	
175	..	108	283	..	..	..	..	283	
872	..	150	1,022	..	..	..	..	1,022	
426	1	81	508	..	..	..	..	508	
291	..	65	354	..	..	..	..	354	
642	..	56	698	..	..	..	..	698	
410	..	61	471	..	..	..	..	471	
586	3	114	703	..	..	..	..	703	
840	1	93	934	..	..	..	..	934	
1,410	..	178	1,588	..	..	..	..	1,588	



Number.	NAMES OF VILLAGES.	Last Payments.					Rate.
		Taken on the Average for 10 years.	According to Jummabundee.				
			Rice.	Rubbee.	Wurkus.	Total.	
1	2	3	4	5	6	7	8
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
96	Shemtch .....	33	37	..	..	37	6
97	Manjloshce.....	114	128	..	55	183	5½
98	Kakueh .....	329	396	..	127	523	5
99	Sacc .....	64	763	1	113	877	5½
100	Oosur Boodrook.....	46	620	..	102	722	5
Total.....		49,160	55,728	308	8,000	64,036	..

Assessment according to proposed Survey Rates.									Remarks.
On the Cultivation of				On Waste lands.				Total on Cultivation and Waste.	
Rice.	Rubbee.	Wurkus.	Total.	Rice.	Rubbee.	Wurkus.	Total.		
9	10	11	12	13	14	15	16	17	18
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
24	..	..	24	..	..	..	..	24	
180	..	159	239	..	..	..	..	239	
390	..	97	487	..	..	..	..	487	
841	3	117	961	..	..	..	..	961	
520	..	97	617	..	..	..	..	617	
55,574	406	6,937	62,917	239	4	106	349	63,266	

(Signed) J. FRANCIS, Major,  
Superintendent Revenue Survey and Assessment,  
Tanna and Rutnagherry.

(True Copy)  
W. WADDINGTON, Captain,  
In charge Revenue Survey and Assessment,  
Tanna and Rutnagherry.

*Measurement Test Statement.*

NAME OF DIVISION.	Year.	No. of Fields.	Fields in which the percentage error was within.										Errors above 10 per cent.
			1	2	3	4	5	6	7	8	9	10	
Rajpooree .....	1855-56	1,013	497	264	135	51	31	16	8	2	1	1	7
Tulleh .....	1857-58	973	410	232	133	75	43	17	17	17	6	9	14

W. WADDINGTON, Captain,

In charge Revenue Survey and Assessment,  
Tannah and Rutnagberry.

*Classification Test Statement.*

Name of Assistant.	Name of Division.	No. of Fields.	Result.										Average Error
			Errors within										
			Pies.	Pies.	Ans.	As. Ps.	Ans.	As. Ps.	Ans.	As. Ps.	Ans.	As. Ps.	
			6	1	1 6	2	2 6	3	3 6	4			
Mr. Hexton.....	Talooka..	1,932	370	832	543	115	45	25	2	..	..	} 8 Pies.	
	Petta ..	1,541	296	665	452	90	34	3	1	..	..		

W. WADDINGTON, Captain,

In charge Revenue Survey and Assessment,

Tannah and Rutnagherry.

*Revenue Survey and Assessment.*

. No. 1913.

## REVENUE DEPARTMENT.

*Bombay Castle, 11th June 1863.*

Letter from the Revenue Commissioner, N. D., No. 851, dated 1st April 1863, with accompaniments—Relative to the introduction of revised rates of Assessment into the Mamlutdar's and Tulch Mahalkurree's Divisions of the Rajpooree Talooka of the Colaba Sub-Collectorate.

RESOLUTION.—Government approve of the rates proposed by Major Francis, and confirm the orders of the Revenue Commissioner authorizing the introduction of the Settlement.

2. As regards the right of the Hubshee to levy fees on boats entering the Junjeera Creek, the Commissioner of Customs, Salt, and Opium, should be requested, with reference to the correspondence ending with Mr. Spooner's letter, No. 1095, dated 24th June 1859, to again take the subject into consideration, and report to Government his views and opinion upon it. In doing so, the Governor in Council would wish Mr. Laverarity to consider the question on the principles laid down in paragraph 1 of the letter from the Government of India, dated 8th September 1856, and show the effect which he conceives the admission of all the Ports situated in Foreign Territory on the Continent of India within this Presidency to the privileges of British Ports would have on our Customs returns.

3. The fee for Roads and Education should be imposed at once along with the rates.

4. These papers should be printed, and the Superintendents of the Surveys should in future be empowered to have all such reports printed at once like any other Government paper, and sent in as

soon as printed. They would thus save much time and trouble to the Collectors, the Revenue Commissioners, as well as to Government.

A. D. ROBERTSON,  
Secretary to Government.

To the REVENUE COMMISSIONER, N. D.,

The COMMISSIONER of CUSTOMS,  
SALT, and OPIUM, with extract  
from Papers as per margin.

{ Paragraph 5 of Major Francis' letter,  
No. 54, dated 2nd January 1863.  
Paragraph 1 of letter from the Acting  
Collector of Tanna, No. 293, dated  
17th February 1863.  
Paragraph 3 of letter from the Re-  
venue Commissioner, N. D., No.  
851, dated 1st April 1863.

The REVENUE COMMISSIONER, S. D.



**SELECTIONS FROM THE RECORDS OF THE BOMBAY  
GOVERNMENT.**

No. LXXV.—NEW SERIES.

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**P A P E R S**  
**RELATIVE TO THE INTRODUCTION**  
**OF**  
**REVISED RATES OF ASSESSMENT**  
**INTO**  
**THE WALWA TALOOKA**  
**OF THE**  
**SATTARA COLLECTORATE.**

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**Bombay:**

**PRINTED FOR GOVERNMENT  
AT THE EDUCATION SOCIETY'S PRESS, BYCULLA.**

**1863:**





No. 1376 OF 1863.

REVENUE DEPARTMENT.

From W. HART, Esq.,  
Revenue Commissioner, S. D.,

To the SECRETARY TO GOVERNMENT.

Sir,—I have the honour to submit the accompanying report (No. 116, dated the 5th instant), received through the Collector of Sattara from Major Anderson, Superintendent of Revenue Survey, proposing revised rates of assessment for the entire Walwa talooka of the Sattara collectorate according to its original boundaries.

2. Mr. Chapman, in submitting this report, writes as follows (No. 639, dated 9th May 1863):—

“Major Anderson does not consider the Walwa to be equally favoured with the adjacent Kurar talooka in point of climate or communications.

“2. While therefore taking the Kurar rates which have recently received the sanction of Government\* as his standard, he proposes adopting the 2nd class rates of that talooka as the first class Walwa ones, the third for the second, and so on down to the 5th. According to this arrangement Rs. 2-10 will be the maximum rates in lieu of Rs. 3, and so on in the same proportion. With regard to the sixth class or hill villages one rupee per acre has been fixed as a maximum, as was done in the case of the Kurar and Targaum talookas.

“3. The financial results are that there will be an increase on the actual realizable revenue in excess of that of last year of Rs. 18,886. Land of the assessed value of Rs. 9,170 is waste, and judging from what

New assessment on occupied land . . . . .	Rs. 2,53,491
Collected from the same land in 1861-62 . . . . .	2,34,605
	<hr/>
Total. . Rs.	18,886

has taken place elsewhere, this will be immediately taken up.

Rs. 18,886  
9,170

Rs. 28,056

It may therefore be assumed that the total realizable revenue of the talooka will be some Rs. 28,056 in excess of that previously collected.

“ 4. Major Anderson has annexed a statement from which it will be seen that the price of the principal grains has about trebled within the last twelve years. Throughout the country a very great revolution, the importance of which we are as yet, perhaps, far from realizing, has and is taking place in this respect. It is a common saying that the ryots can now meet the Government demands by the sale of their straw, and are not compelled to bring their corn into the market at all. We need then be under no apprehension that our revised rates are excessive. On the contrary it is, perhaps, a question whether they are sufficiently high to meet the just demands of Government on the soil.

“ 5. With reference to the remarks contained in Major Anderson's 7th paragraph, the Collector begs to state that when visiting the Walwa talooka last season he was much struck with what appeared to him its extraordinary cotton-growing capabilities. He accordingly wrote to Dr. Forbes for a supply of New Orleans seed. He hopes to revisit the talooka at the sowing season, about the end of next month, and will use his best efforts to ensure a fair trial being given to the experiment of growing this description of produce.

“ 6. It only occurs to the Collector to suggest that Government should reserve to themselves the right of increasing the assessment in the proportion of one 'anna in the rupee for local improvements and schools. In talookas hitherto surveyed the right to only half an anna has been reserved.”

3. I beg to state my general concurrence in Major Anderson's proposals, which are also approved by Mr. Chapman, and I solicit the early sanction of Government to the proposed new rates, to admit of their being introduced during the current season.

4. The observations in paragraph 5 of Mr. Chapman's memorandum above transcribed and in paragraph 7 of Major Anderson's report are interesting and merit the attention of Government. I would suggest that Mr. Chapman should be furnished by Government with some of the Peruvian cotton seed, supplies of which have recently been placed in the hands of some of the other Collectors in this division. The Collector will himself be able to assist cultivators in obtaining New Orleans cotton seed in any quantity that may be required.

5. With respect to the suggestion made in the 6th paragraph of Mr. Chapman's memorandum, I think that in this as in all similar cases it should be explained to the people that the settlement now made affects only the claim of Government upon them for imperial revenue, and is not intended to preclude such taxation for *local* purposes as may be necessary ; with a guarantee, however, that the tax on land for such local purposes shall not at any time during the thirty years' settlement bear more than a certain maximum proportion to the imperial land revenue. The maximum I would propose for such local cases is described in paragraph 10 of my letter No. 1427, dated 21st June 1862, to which letter and its continuations (No. 1884, dated 4th August, and No. 2348, dated 22nd September 1862), with their accompaniments, I respectfully beg the early attention of Government, as there is no subject of more vital importance to the progress of this country than that which is discussed in them, viz. the best means of teaching the people to help themselves in matters of local improvement, instead of remaining as heretofore as dependent on Government for every improvement in their condition as if they were children or idiots.

I have the honour to be, &c.

W. HART,  
Revenue Commissioner, S. D.

*Camp Mahabuleshwar, 15th May 1863.*

No. 116 OF 1863.

From Major W. C. ANDERSON,

Supt. of Revenue Survey and Assessment, S. M. C.,

To F. S. CHAPMAN, Esq.,

Collector of Sattara.

SIR,—I have the honour to forward the following report on the revised rates of assessment I propose for the entire old Walwa talooka of the Sattara collectorate, comprising 103 Government villages. Several alterations have been made in the boundaries of the talooka in the course of the last few months, but it will be more simple to deal with it according to the old boundaries.

2. This talooka is the southern of the western talooka of Sattara. It is bounded on the south and south-west by the river Warna from near its source on the western ghats to its confluence with the Krishna in the south-eastern corner of the district; on the east and north-east it is mainly bounded by the river Krishna, a few villages only being situated on the east or left bank of that river; on the north it is bounded by the Kurar talooka, into which the old boundary of the Walwa talooka projects considerably, even up to within some seven miles of the town of Kurar; on the western half of the northern boundary the Walwa talooka is separated from the Kurar talooka by a lofty spur of the western ghats which immediately overhangs the Warna. The talooka for some fifteen miles to the westward is thus reduced to a mere strip of country frequently not more than three miles wide.

3. This talooka is thus composed of the country situated in the angle between the Warna and Krishna rivers. The eastern part near the confluence is a dead plain, generally of black soil of very superior quality. Proceeding westward the character of the country

becomes more hilly, small off-shoots from the great spurs of the ghauts occur, tracts of "mal" or stony land also become much more common.

4. The western part of the talooka is exceedingly hilly. The great spur of the ghauts separating this talooka from that of Kurar, which must be from 1,200 to 1,500 feet high above the plain, breaks up into a number of smaller spurs which take up the greater part of the interval between the Warna and the northern boundary.

5. As regards fall of rain a great variety of climate is met with. On the western ghauts and for some miles down the Warna valley the fall is too heavy for any dry-crop cultivation except that of the hill or uncontinuous kind. In proceeding eastward the fall of rain becomes more and more moderate and seasonable, till towards the eastern centre of the district the general average of the rains is all that could be desired for the most successful prosecution of dry-crop cultivation of the most superior kind.

6. There is a good deal of turee or rice land and of bhagaet or garden land in the centre and west of the talooka, the latter watered both from wells and from "paths" or watercourses led from streams. The cultivation of sugarcane is carried on to a very considerable extent.

7. Some cotton is grown in the Walwa talooka in the eastern villages. The soil and climate from analogy I should there imagine to be particularly favourable to the cotton plant, but the high prices of grain and fodder commonly prevalent in these parts must render cotton a less paying crop than grain when the cotton market is in its ordinary state. The outturn of New Orleans cotton per acre is, however, at least 50 per cent. more in value than that of native cotton, and should the attempt which you have informed me you propose to make to introduce that variety prove successful, some considerable addition to the supply of cotton might be expected from this and adjacent districts; for there is much land belonging to the Kolapoor state and jagheers and to the Sanglec and Meeruj jagheers where I feel certain New Orleans cotton would grow well and prove a paying crop if the prejudices of the people could be

overcome, and this can be only done by showing them that the cotton will grow and pay. Once introduce New Orleans cotton successfully in the Walwa talooka and the cultivation of it will of itself extend into the adjacent districts in the same manner as it has extended from the Dharwar talookas into the included jagheers and adjacent districts.

8. The Walwa talooka is traversed from north to south by the made-road from Kolapoor to Sattara, from which a cleared branch of about ten miles communicates with Batee Secralch. These are the only made-roads in the district. The eastern and central part is indeed generally of sufficiently level surface to admit of cart traffic by the ordinary country tracks during nine months of the year. The main lines of export are two—to the east for rice and ghaut produce to the great bazars of Sauglee and Meeruj, and to the coast for grain and oil-seed produce. The communication with the coast is either by the circuitous route of Kurar and the Koombarleli ghaut to Chiploon, or by bullock track *viâ* Mulkapoor (a large entrepot in the Kolapoor state down the Amba ghaut to the tidal part at Rajapoor), or by a second bullock track which follows the left bank of the Warna and descends the Teoora ghaut to Sungmeshwur—another tidal port in the Rutnagherry collectorate.

9. In ready means of communication with great markets the bulk of the old Walwa talooka is decidedly inferiorly situated to the Kurar talooka, with the exception of the northern portion which projects into the vicinity of Kurar itself and is nearly on a par with the villages south of that place.

10. The people of the Walwa talooka appear on the whole to be prosperous. Their assessment hitherto has certainly been light on the average compared with that which has existed hitherto in the neighbouring talooka of Kurar or in Tasgaum (some villages of which are contiguous to the Walwa boundary) while under the rule of the chief previous to the lapse in 1848. There are indeed great inequalities to be found both in the case of entire villages and in that of individual assessments, but on the whole the old assessment is beyond all doubt low compared with that which has prevailed in contiguous districts, and this I attribute to the distance from Sattara.

In the talookas near the capital we find the assessment without exception to have been run up under the former rule to the highest point. In the more distant talookas, such as Beejapoor and Punderpoor, we found the revenue management to have been very lax, the distance from the capital permitting the district and village officials to settle matters among themselves with much less check or interference on the part of the head-quarter officials than would be experienced in districts nearer home.

11. I have obtained complete accounts for all the villages of the Walwa talooka since the accession of British rule, of which the following statement is an abstract as regards the Government land. The areas have been deduced from a conversion of the beegas of the former survey into acres :—

YEARS.	Occupied	Loanee Total or Permanent Reductions.	Remissions on account of Poverty, &c.	Realizations.
	Acres.	Rs.	Rs.	Rs.
1847-48 .....	110,711	31,986	13,031	2,10,768
1848-49 .....	108,499	31,820	28,073	* 1,98,458
1849-50 .....	108,738	30,163	40,294	1,87,875
1850-51 .....	108,921	29,272	12,984	2,15,463
1851-52 .....	109,189	28,637	36,348	1,91,781
1852-53 .....	109,776	27,968	24,495	2,05,076
1853-54 .....	108,543	27,742	9,506	2,20,063
1854-55 .....	110,012	27,792	3,900	2,26,415
1855-56 .....	110,232	28,168	2,524	2,26,419
1856-57 .....	110,370	28,058	2,189	2,28,943
1857-58 .....	111,409	27,834	21,425	2,10,686
1858-59 .....	112,312	27,743	1,994	2,31,086
1859-60 .....	113,012	27,676	4,134	2,30,051
1860-61 .....	114,264	27,639	2,423	2,33,842
1861-62 .....	113,711	27,661	1,470	2,34,605

12. The fluctuations in the occupied area above shown are exceedingly small. Little reliance, however, is to be placed upon this part of the statement, as, from the classification returns made out in the field for the majority of the villages last year (1861-62) and for the remainder in the present year, the area of Government land



actually occupied amounts to 157,129 acres, or more than one-fourth in excess of the area brought to account in 1861-62. When it is considered that no less than 10,777 acres of the above area consist of garden and rice land, very much of which is of most excellent quality, and that of the remaining dry-crop land a considerable proportion is fine black soil, it is evident that the pressure of the old assessment (Rs. 1-7-11 per acre) on the ascertained occupied area could not be heavy on the average, though faulty distribution might, and in fact did beyond all doubt, cause it to press very unequally.

13. The remissions in the early years of our tenure of the district were very heavy. About 1853-54 a stricter system of management was introduced generally through the collectorate, and the annual amount of remissions rapidly decreased. In the exceptional year 1857-58 alone were they heavy. In this year the rains failed to a great extent in this talooka. The prices prevailing twelve and fifteen years back, added to inequalities of assessment, may have rendered the heavy remissions then granted necessary. At the present time prices are at least double what they were then, and the revenue realized of late years must on the average have pressed very lightly.

14. I do not consider that any villages of the Walwa talooka have advantages of climate and communications together equal to those of the 1st class of the Kurar talooka, the maximum dry-crop rate of which was fixed at Rs. 3. On the whole the northern or 1st class villages of Walwa appear to me to require rates corresponding to those of the 2nd class of Kurar, namely, Rs. 2-10 per acre maximum dry-crop. For the eastern and central portions of the talooka, constituting the 2nd class, rates similar to those of the 3rd class of Kurar will, it appears to me, prove suitable, and so on up to the ghauts, the rates for the villages corresponding in westerly position to those of Kurar being in each class fixed on the same standard as those of the next lowest class in Kurar down to the 4th class. For the 5th or lowest class, excluding hill villages, consequently I propose rates one step lower than for the 5th class in Kurar.

15. For the hill villages of Walwa I propose rates identical with the hill villages of Targaum south of the Kocena river. They are contiguous to them and identically situated in every way. In fixing the above rates my intention has been to adopt for villages similarly situated, as regards climate, with Kurar villages, rates one class lower than those sanctioned for their corresponding Kurar villages on account of inferiority of advantages as regards communications.

16. The following statement shows the estimated result of the imposition of the above rates, the number of village in each class, the maximum rate under each head of dry-crop, garden, and rice land, and the revenue realizable is shown in comparison with the realizations of last year :—

Class.	Number of Villages.	Maximum Dry Crop Rates.	Maximum Rice Land and Garden Rates.	Total Collections in 1861-62 on Occupied Land.	Estimated Revenue under Survey Rates of Occupied Land.	Survey Assessment of Government Arable Unoccupied Waste.	Survey Kamal or Assessment of Government Occupied and Unoccupied Arable Waste.
		Rs. A. P.	Rs. A. P.	Rs.	Rs.	Rs.	Rs.
1	10	2 10 0	8 0 0	64,163	62,873	2,166	65,029
2	37	2 6 0	7 8 0	1,28,664	1,46,756	4,437	1,51,193
3	11	2 2 0	7 0 0	13,958	13,639	379	14,018
4	15	1 14 0	7 0 0	14,811	16,984	418	17,402
5	12	1 10 0	6 0 0	9,635	10,223	735	10,598
6	18	1 0 0	5 0 0	2,909	3,026	1,395	4,421
Total..	103	....	....	2,34,605	2,53,491	9,170	2,62,661

17. The villages of the 1st class are those adjacent to the Kurar talooka in the valley of the Krishna, and the high standard of the old assessment of that talooka appears to have extended in some degree to these villages. In this class the new assessment involves a decrease, namely, from Rs. 64,163 to Rs. 62,873. In the 2nd class the new assessment effects an increase of from Rs. 1,28,664

to Rs. 1,46,756. These villages comprise the whole of the south-eastern and central part of the talooka to a little to the westward of the Kolapoor and Sattara made-road. They are contiguous on the east to some of the villages of the Tasgaum talooka of Belgaum, the maximum dry-crop rate in which was Rs. 2. These villages I settled in 1852-53, and the new assessment was considered to be extraordinarily low. Prices are now double what they were then.\* The climate of the central part of Walwa is decidedly more certain than that of Tasgaum generally. In the better class of soils our standard of classification is now about one anna in the rupee higher than it was when Tasgaum was classed, so that the difference in the assessment of corresponding soils of the better kind in the two talookas will be more than is represented by the difference in the maximum rate, six annas, or Rs. 2-6 for Walwa against Rs. 2 in Tasgaum. The remaining classes (the 3rd, 4th, 5th, and 6th) call for no particular remark. They pay at present but a fraction more on the average than they did fifteen years ago, and the small fluctuations in the assessment and collections show that even under the low prices then prevalent the assessment was far from overwhelming. The small increase now proposed will only bring up their taxation to a par with that of adjacent districts recently settled.

18. A considerable part of the increase of revenue will result from the assessment of inferior soils, of which there are considerable tracts in the central part of the talooka. Under the prices formerly prevailing the cultivation of these soils would not pay: they were considered to be unarable, never having been cultivated within the memory of man, and were either held at a nominal assessment or were used by the nearest cultivator, or any one else that chose, for grazing, without being brought to account at all. This will explain to some extent the great excess in the area ascertained to be claimed as occupied by the Survey and that recorded in the accounts. The present high prices have rendered these poorer lands profitable for cultivation and the object frequently of keen competition at the settlement; thus the assessible area is very considerably increased.

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\* See Table at end of this letter.

19. The general result of the proposed settlement shows an increase on the revenue of last year of from Rs. 2,34,605 to Rs. 2,53,491, and besides Rs. 9,170 assessment of Government arable waste, much of which will be doubtless taken up. An immediate increase of revenue was the ordinary result of the settlement in the eastern talookas; so there is nothing unusual in the estimated result in the Walwa talooka.

20. Regarding the rates to be imposed there is less scope for doubt in this talooka than in most; for in physical characteristics it is almost identical with districts bounding it on two sides and in which the settlement has been successfully introduced.

21. I propose to settle the hill villages of this talooka, for the settlement of which on the old system no preparations have been made, and also those in the eastern frontier, the early settlement of which is advisable this season—in all about probably one-third of the talooka; the rate papers for the whole talooka cannot be completed in time for the settlement this year. The classification was only completed in the middle of the present season, and the making up the papers, before the completion of which I could not attempt to decide upon the rates, has only been very recently accomplished.

22. I append to this letter a statement of the prices prevailing at Kurar, the chief market of the south-western districts of Sattara, in January and June of each year from 1851. The materials for this statement I have obtained from the records of the talooka kutcherry.

23. I shall be obliged by your forwarding this letter to the Revenue Commissioner as soon as you conveniently can, that it may be disposed of as soon as possible.

STATEMENT of Prices prevailing in the Market of KURAR in January and June of each year since 1851. The Sattura Seer is about 2 Pounds.

Years.	Months.	Seers for One Rupee of—			
		Jowarree.	Wheat.	Grain.	Bajree.
1851..	{ January .....	39	31	37	35
	{ June .....	37	30	36	No data.
1852..	{ January .....	36	22	27	34
	{ June .....	34	29	28	No data.
1853..	{ January .....	30	26	24	30
	{ June .....	24	18	21	23
1854..	{ January .....	36	30	34	30
	{ June .....	22	17	17	No data.
1855..	{ January .....	24	20	17	23
	{ June .....	17	16	18	18
1856..	{ January .....	24	17	22	24
	{ June .....	29	21	30	27
1857..	{ January .....	32	21	28	31
	{ June .....	28	19	23	26
1858..	{ January .....	28	20	19	29
	{ June .....	25	20	22	23
1859..	{ January .....	26	18	20	25
	{ June .....	22	19	25	22
1860..	{ January .....	22	16	18	23
	{ June .....	20	15	14½	19
1861..	{ January .....	21	14	17	21
	{ June .....	18	15	12	18
1862..	{ January .....	16	15	15	15
	{ June .....	12	15	11	11
1863..	{ January .....	11	10	14	13
	{ May .....	10	9	10	9½

I have the honour to be, &c.

W. C. ANDERSON,

Supt. Revenue Survey and Assessment, S. M. C.

Superintendent's Office, Camp Adhole,

5th May 1863.

*Revenue Survey and Assessment.*

No. 2110 of 1863.

REVENUE DEPARTMENT.

*Bombay Castle, 27th June 1863.*

Letter from the REVENUE COMMISSIONER, S. D., No. 1376, dated 15th May 1863, with accompaniment, relative to the introduction of revised rates of Assessment into the Walwa talooka of the Sattara collectorate.

RESOLUTION.—His Excellency the Governor in Council approves and sanctions the rates of assessment which Major Anderson has proposed for the Walwa talooka, and which are recommended for adoption by the Revenue Commissioner and the Collector.

2. The right to impose hereafter an additional cess of one anna for every rupee of assessment for local purposes, the proceeds of which will be expended on roads and schools within the districts, should be reserved to Government. The power also of adding a water rate to the rates of assessment now sanctioned, should new works of irrigation be constructed, should also be reserved.

3. With reference to paragraph 4 of Mr. Hart's letter, the Governor in Council regrets to state that Government are unable to forward any of the Peruvian cotton seed to the Collector of Sattara. Only 32lbs. weight of this seed was received from the Home Government, and the whole of it was distributed at once to the Collectors of those districts which were known to be peculiarly adapted for the cultivation of cotton. The Secretary of State will, however, be requested to procure if possible further supplies of the Peruvian seed, and to forward them in time for next year's sowing. Should he do so, Mr. Chapman's request will be borne in mind.

Secretary to Government.

To

The REVENUE COMMISSIONER, S. D.



SELECTIONS FROM THE RECORDS OF THE BOMBAY  
GOVERNMENT.

No. LXXVI.—NEW SERIES.

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OBSERVATIONS  
ON THE  
INFLUENCE OF FORESTS,  
AND ON THE  
GENERAL PRINCIPLES OF MANAGEMENT,  
AS APPLICABLE TO BOMBAY;

BY

N. A. DALZELL, M.A., F.R.S.E.,  
CONSERVATOR OF FORESTS, BOMBAY PRESIDENCY.



**Bombay:**

PRINTED FOR GOVERNMENT  
AT THE EDUCATION SOCIETY'S PRESS, BYCULLA.

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1863.





## OBSERVATIONS ON THE INFLUENCE OF FORESTS, ETC.

It has been said that to pursue the progress of man step by step in the destruction of forests would be to write the history of civilization, as man is developed only at the expense of forest vegetation. Hence an endeavour has been made to establish it as a maxim that civilization is antagonistic to the conservation of forests. When this sentiment, however, is analysed, it will appear pretty evident that it is more distinguished for brevity than for truth; for it is in civilized countries, such as Germany and France, that the conservation of forests is considered of vital importance to the progress and well-being of man, and that without forests these would become, like Asia Minor (the cradle of the human race), a country of ruined cities.

2. It is only in the first step of civilization that man is the enemy of forests. When the savage hunter begins to be dissatisfied with the precarious produce of the chase and to perceive the advantages of a settled abode and a regular supply of food, he cuts down the trees which formerly sheltered him and "establishes a clearing." The pioneers of the so-called civilization may come from a country already civilized and follow the example of the savage, but their acts and objects are the same as those of the savage; and a man cannot but feel that in becoming a pioneer of the so-called civilization in a new country he has gone back for a time at least into a state of semi-barbarism. Be this as it may, the gloomy and impenetrable forest disappears, and is replaced by smiling homesteads and waving crops; towns arise; the hunter becomes a farmer; food is multiplied; and the plough that prepared the land is made from the trees that lived on the ground which they are now made to tear up.

3. But it has not always been with such justifiable motives as these that man has devoted himself to the destruction of forests.

Home bounties and a desire of immediate gain tempted our older North American colonies (now the United States) to the most lavish destruction of the noble ship-timber which their forests formerly contained. This was cut down within a few years and sold at a comparatively low price, and they have now leisure to repent of former acts, and to acknowledge with regret that land once cleared of timber does not soon clothe itself again with a new growth of merchantable trees; that they can run up piles of brick and mortar, but that they cannot run up trees; that the thing once done cannot be undone; and that there is no species of architecture by which they can erect oaks, beeches, or other stately timber trees at will. For a great many years that noble timber would have afforded a handsome annual revenue, as well as an inexhaustible supply of material for the once-flourishing colonial dockyards.

4. In addition to this wholesale destruction of forest in the North American colonies, there existed a practice (barbarous, reprehensible, and wasteful) by which the colonist, after procuring two or three successive crops from land newly cleared and burnt, commenced to cut and burn the forest in a new place, changing his location every two or three years.

5. The effects of cultivation in the States, as observed by Mr. Stevenson in 1840, can now be traced as far as the Alleghany mountains, the greater part of the land between them and the ocean having been cleared and brought into cultivation. "It is much to be regretted," continues Mr. Stevenson, "that the early settlers in clearing this country were not directed by a systematic plan of operations, so as to have left some relics of the natural produce of the soil, which would have sheltered the fields and enlivened the face of the country, while at the same time they might by cultivation have been made to serve the more important object of promoting the growth of timber. Large tracts of country, however, which were formerly thickly covered with the finest timber are now almost without a single shrub, everything having fallen before the woodman's axe, and in this indiscriminate massacre there can be no doubt that many millions of trees have been left to rot, or, what is scarcely to be less regretted, have been consumed as firewood."

6. This work of general destruction is still going forward in the Western States, in which cultivation is gradually extending, and the formation of some laws regulating the clearing of land, and enforcing an obligation on every settler to save a quantity of timber which might, perhaps, be made to bear a certain proportion to every acre of land which is cleared, is a subject which I should conceive to be not unworthy of the attention of the American government, and one which is intimately connected with the future prosperity of the country. But should population and cultivation continue to increase in the same ratio, and the clearing of land be conducted in the same indiscriminate manner as hitherto, another 100 years may see the United States a treeless country. Can we regard such a prospect as this as the triumph of civilization, and not rather as the result of reckless folly? Even the notice of American novelists has been attracted to this subject, and Mr. N. Hawthorne tells us that the New England yeoman is now as niggardly of each stick of firewood as if it were a bar of Californian gold.

7. Nor was it to any kind of civilization that the partial destruction of the forests of France can be attributed. The French revolution broke down the barriers which the authorities had opposed to the destruction of the forests. The mob (out of hatred to the former government), and the landed proprietors, who had hitherto jealously conserved them, carried fire and destruction into the woods, and the trees disappeared in all directions, and the French government have long been engaged in endeavouring to repair the ruin effected in those frightful times.

8. The destruction of forests is a matter of much more serious anxiety for most governments than for Great Britain, which has the happiness to possess such inexhaustible stores of under-ground fuel and many colonies to send her supplies, consequently the calamity of a scarcity of wood and its bad effects on all the domestic, public, and social concerns of the people visible in many woodless countries are not felt in England, where the destruction of forest has been greatest.

9. From the earliest records we possess we learn that every country in Europe, including Iceland (where now there is not a single

tree), was thickly covered with forests. These were no doubt swept away by a fast-increasing population, and the necessary clearing in the first-step of civilization to provide a corresponding amount of food. Ireland used to be called the woody isle, and the descriptions of Strabo and Ptolemy corroborate the existence of extensive forests in Scotland, where the Roman legions by command of the Emperor Severus were employed in cutting down the forests.

10. But we are now on a higher platform of civilization, and are able to perceive by the help of these ancient records, as well as by the discoveries of recent science, that forests are something more than obstructions to cultivation and store-houses of materials for the arts of civilized life. We now know that a forest is not merely an aggregate of trees, but an embodiment of life, subject to disease, old age, and death, and that in their living functions they influence the physical character of a country, and are connected with important changes in the economical, commercial, and artificial relations of the population; that they enter into mutual relations of cause and effect, with many physical phenomena which affect the productiveness and agricultural interests of a country. This knowledge has been of slow growth, and has had to combat with much ignorance and prejudice, and whatever good ground may have been discovered for despising scientific theories, the facts collected together are too numerous and too authentic not to carry with them the fullest conviction.

11. Mr. Whitley in his admirable papers on the climate of Great Britain states that the elements which constitute climate are beyond man's control, and that he is comparatively powerless to mitigate its rigour or to add to its generous influence. The facts which I shall presently adduce will show that Mr. Whitley's statement is not exactly correct, and that man, feeble as he is, wants only time and proper combination to produce the most marked changes not only in the climate of the country he inhabits, but on places far distant from his abode. If this be found to be really the case, then forests deserve to become an object of careful examination, not only in a financial but also in a politico-economical point of view.

12. According to the report of Tacitus the sky of England, which was densely overspread with large forests, was constantly over-

cast with clouds and rain. The cold, however, was not very great, and according to Cæsar's statement the cold was not so intense as in France (*Vita Agricolæ*, *Cap. XII.*, and *Cæsar, de Bello Gallico*, *lib. V. Cap. X.*)

13. In Italy in ancient times the forests occupied all the hilly districts, while the water accumulated and spread over the low lands. The history of the earliest period informs us that immense quantities of timber were exported in exchange for wine, oil, and other products. Inundations of the Tiber surrounded the Mons Palatinus with a marsh, and the woody declivities of the Appennines exerted such a powerful influence on the temperature of Italy that, according to Livy, the hardy Roman soldiers suffered much at the siege of Viji (404 A.C.) from violent frosts and heavy snowstorms. According to Columella there were in his own lifetime winters so severe that the frost destroyed every tree in the vicinity of Rome; and Livy states that ice interrupted the navigation of the Tiber, which was every winter regularly covered with ice; and Horace in his odes states that the streets of Rome were frozen over, that mount Soracte was covered with snow, and that ice obstructed the course of rivers.

14. All those phenomena have long ceased; even hoar-frost appears to be a very rare occurrence. Occasionally we hear of snow-showers; but no sooner has it fallen than it melts away; and no sensible alteration is produced on the present high temperature of Italy.

15. The prevalence of this latter must be exclusively attributed to the clearing of the forests situated on the slopes of hills and mountains.

16. In Spain, according to the report of Livy (*lib. XXI.*), the snow of the year 218 A.C. lay in the vicinity of the Ebro for thirty days to the depth of four feet.

17. Tacitus states (*Germania V.*) that the cold weather prevented fruit from ripening, and even fifty years before Christ grapes failed in Belgium. According to Ovid (*Eleg. X.*) the vines were frequently destroyed by frost in countries where nothing similar is now witnessed; even wine froze in open vessels, and the Black Sea was covered with ice so strong that heavy waggons could pass safely over.

A temperature so low occurs no longer in these and other countries of the same latitude.

18. We draw therefore the conclusion that 1800 years ago extensive forests exerted such a strong influence on the climate that the temperature of the coldest month was from  $9^{\circ}$  to  $11^{\circ}$  Fahr. lower than at present, and that Germany had winters like those of Western Russia. It follows from observations, calculations, and historical notices that in consequence of the clearing of forests, the temperature of European countries has been on the increase—an effect produced entirely by the labours of man.

19. Similar and still greater alterations in temperature are linked with those depending on forests, in so far as they are attributable to the formation and preservation of flowing waters, and these as a matter of course possess a powerful influence on the physical condition, the trades and manufactures, the agriculture, commerce, and navigation of a country.

20. All the rivers of Europe testify to the retreat of their contents to a lower level, as also to the drying up of innumerable springs. The large masses of water they used to carry formerly excavated the valleys and laid the foundation of the alluvial plains. The drifted silt is found far from their present banks, and leads us to form some estimate of the breadth of their original beds.

21. The hands of man, says Sir Roderick Murchison in his *Geology of Russia*, have produced and are still effecting considerable changes in large tracts in Russia by the destruction of her forests. A few centuries only have elapsed since Northern Russia was a dense virgin forest, with vast intervening marshes and lakes, but now her gigantic pine trees are felled, lakes and marshes drained, and the culture of corn extended to the latitude of the White Sea. The natural recipients of so much moisture having been destroyed, we may thus in a great measure account for the sensible diminution of late years in the waters of the Volga and other great streams whose affluents rise in those very countries. Certain observers have supposed that there is the same volume of water as before, but that it flows off more rapidly. Whether this opinion be adopted, or that of a sensible annual diminution of moisture by the destruction of dense

forests which formerly obstructed evaporation, the result is the same as concerning the effects on the surface and internal tracts of the country. "For our own part," adds Sir Roderick, "we can scarcely refrain from thinking that the axe of the miner (for wood is the chief fuel of Russian miners) has been a prime cause of this increasing drought—an opinion we formed in the Ural Mountains, whence the greatest feeders of the Volga proceed, and where the inhabitants, complaining of the annual decrease of water, invariably refer this effect to the clearing away of the forest."

22. In another part of the same work Sir Roderick states as follows:—"Covered as Russia has been with magnificent forests which have hitherto supplied her inhabitants alike with shelter and with fuel, the time is fast approaching, and in some large tracts has already arrived, when these resources will no longer meet the exigencies of an increasing population."

23. Having now shown the ancient condition of several European countries, and the changes that have been effected in their climates by the destruction of forests and in the quantities of running water, let us turn our attention for a little to the same phenomena as exhibited in such tropical and sub-tropical countries as have been the subject of record. Since the early dawning of maritime discovery, when Jean Gonzales Tarco and Tristan Váz landed at Madeira, that island was covered with immense forests to which it was indebted for its name, Madeira being derived from the Latin *materia*, of which building-timber was originally the type. All these have long since disappeared. Columbus mentions in his journal that formerly rain had been equally abundant on Madeira, the Canaries, and the Azores before their shady forests were felled and burnt by the improvident settler.

24. The island of Mauritius presents in its central plateau vast forests remarkable for the multiplicity of species which compose them. The persons employed in the cultivation of the sugarcane have carried on an incessant war with these forests, and every day has seen their area diminishing. But it appears from a recent official report to the Royal Society of the Mauritius that the authorities of the island are



now alarmed at the streams which were once so copious gradually drying up.

25. "At the same time," says the Secretary, "that the water in the river has diminished, the forests have been thinned to a considerable extent, and we will now put the question, whether the guardian of the woods and forests should not be charged with replanting trees to replace those that have disappeared?" "Let us cast our eyes," continues the Secretary, "on the barren and naked mountains which surround the town of Port Louis, and when the sun reflects its burning rays, picture to ourselves the mountains covered with trees spreading shade and coolness." If this island, adds Professor Lindley, should in time become barren, it will only undergo the fate which universally attends the destruction or absence of forest in countries exposed to great solar heat.

26. Travellers in Mauritania have discovered in the plains of Mitidjah and the province of Oran traces of a vegetation which is no more, and which has left behind it only the sterility and aridity of a desert. In the province of Constantine, of Philip-ville, on the borders of Rummel, there is not a tree where formerly there was extensive cultivation and a dense population.

27. Judæa had also its forests in ancient times, and which are now to be sought for in vain, and we even find the name of perhaps the most ancient conservator of forests in Palestine under King Artaxerxes in the second chapter of Nehemiah. There is frequent mention in the Bible of the "iarim." Upon Lebanon were found those famous forests of cedars of which in the present day scarcely any remain. Upon Anti-Lebanon pines and firs furnished the Phœnicians with timber for their ships. On the mountains of Bashan there were forests of oaks.

28. The Bible furnishes us too with the names of several forests the actual sites of which are now occupied by an arid soil. Such is the forest of Ephraim, that of Kareth, of Korchah in the tribe of Judah; such was that which covered the district of Baalah on the frontiers of Benjamin and Judah, and to which that town owes its surname of Kirjeathjearim (the town of the forests).

29. The Phœnicians were the principal agents of destruction for the forests of Palestine and Syria. Before the time of Eratosthenes, Cyprus—since so destitute of wood—was covered with forests, and they were thought such a nuisance that possession of land was given to those willing to clear it of trees.

30. At the time when Humboldt visited the valley of Aragua in Venezuela the inhabitants were alarmed at the gradual diminution which had been going on in the waters of their beautiful lake of Valentia. Humboldt compared the statements of older writers with its then condition and was convinced that its waters had very much diminished. Oviedo, who was there towards the end of the sixteenth century, states that the town was built  $1\frac{1}{2}$  mile from the lake, while Humboldt found the distance  $3\frac{1}{4}$  miles. The fact so unquestionable did not pass without numerous explanations from the wise men of the country who fixed upon a subterranean exit for the water of the lake. But Humboldt after a most careful examination of all the circumstances did not hesitate to ascribe the diminution of the water to the extensive clearings of the forests in the course of the previous half century. “In felling the trees which cover the crowns and slopes of mountains,” says this celebrated traveller, “men in all climates seem to be bringing on future generations two calamities at once—a want of fuel, and a scarcity of water.”—(*Humboldt*, vol. v. page 173).

31. Twenty-five years after Humboldt, M. Boussingault visited the valley of Aragua. The inhabitants had now remarked that the lake had not only ceased to diminish, but that it had risen very perceptibly. In the interval important political events had transpired—war had desolated the country and decimated its inhabitants; agricultural operations had been almost abandoned; and the forest which makes such rapid strides in the tropics had regained possession of the soil.

32. Without quitting America let us examine a district where the climate is analogous to that of Europe, viz. the table-land of New Granada, which is 10,000 to 14,000 feet above the sea.

33. The village of Ubaté is now situated in the neighbourhood of two lakes which seventy years before formed but one, and the old

inhabitants saw the water shrinking year after year. The old sportsmen, as well as the annals of the various parishes, show that extensive forests have been cut down in the surrounding country, and the clearing still continues. The inhabitants of Zimjaca, another village in the same valley as Ubaté, all knew it was built close to another lake, and it is now a league from its bank. Formerly there was no difficulty in obtaining building-timber, as the mountains which rose from the valley on either hand were covered with trees, which have mostly all disappeared by the eagerness to procure fuel in manufacturing salt from the springs of Taosa.

34. In the island of Ascension there was an excellent spring situated at the foot of a mountain originally covered with wood. This spring became scanty and dried up after the trees which covered the mountain had been felled. The loss of the spring was rightly ascribed to the cutting down of the timber. The mountain was therefore replanted anew, and a few years afterwards the spring reappeared by degrees and by and by flowed with its former abundance.

35. To these facts, gathered from many sources, and which I could multiply and support by many others of a similar kind, it may be replied that the diminution of the water, incontestible as it is, might have taken place without the clearing away of the forests, and might be due to unknown causes; but it would not be difficult to show that lakes in the vicinity of those that have shrunk most remarkably, but around which no destruction of forest has taken place, have undergone no change in level.

36. The conclusions which it seems legitimate to draw from the whole of the facts now brought together are—

1st.—That the *wanton* destruction of forest has entailed barrenness and aridity on countries renowned in former times for their fertility.

2nd.—That along with woods, springs and rivulets disappear and cease to water the parched land.

3rd.—That the actual temperature of a country is by the destruction of its forests very sensibly increased.

4th.—That the rain gradually washing away the vegetable earth from the sides of the denuded hills condemns them to sterility, while these latter, no longer able to retain and regulate the flow of water that falls on their slopes, are scored by deep gullies formed by impetuous torrents, while the beds of rivers are at one time dry, and at another filled by sudden and short-lived floods.

37. We have still to inquire whether extensive clearings of the forest, which embrace a wide district, cause any diminution in the quantity of rain that falls.

38. Springs and rivulets may shrink and disappear without the effect being ascribable to any decrease in the quantity of rain. Unfortunately the observations we possess on the quantity of rain which falls in any particular district of sufficient antiquity and accuracy to be worthy of confidence are scarcely to be found out of Europe, and there in the generality of instances the soil was cleared before observation began.

39. The United States of America, where the forests are disappearing with such rapidity, will probably one day afford elements for a satisfactory solution of the question.

40. It may be argued, not that the annual quantity of rain is lessened, but that what does fall goes further where there are forests; that in attracting and retaining the moisture of the atmosphere, and by presenting an immense warmth-radiating surface, and condensing the vapour, forests are visited with frequent showers; that the thick canopy of verdure prevents the rays of the sun from penetrating to the ground and absorbing its humidity. This is all true, but this would merely prove that forests economize the rain.

41. It does not indeed seem legitimate to decide that because a country is covered with wood, therefore it is visited with abundant rain. It seems more probable that because the rain is abundant, therefore it is covered with wood.

42. We know that rains fall abundantly in several parts of the ocean, where of course there are no forests to account for it. And yet there are very extraordinary phenomena which still remain unex-

plained and merit the closest investigation of meteorologists. Thus along the whole coast of Peru there is no rain, and no vegetation throughout a large circuit. The rain commences first in the north of Tumbes, and there extensive woods are seen ; towards the east it begins first in the valleys of the Cordilleras which abound in vegetation.

43. The fact is undoubted that there are level countries, particularly under nearly the same latitude, although the one contains a much larger extent of forests than the other, which receive about the same annual quantity of rain.

44. Thus for instance in the woody plains of Bavaria and Prussia the amount of rain is on the whole scarcely greater than what falls in the plains of Champagne, which are destitute of wood. This throws a new light on the subject, and leads us to inquire whether there is any marked difference in the fall of rain between hills and mountains clothed with forests and those entirely denuded.

45. We know that the lowest stratum of air contains the greatest quantity of aqueous vapour, and hence it might be expected, *ceteris paribus*, that more rain would fall on low, level plains than in elevated countries. The contrary, however, is the fact. The increase in the amount of rain is gradual as we ascend up to from 1,000 to 5,000 feet according to the latitude of the place.

46. This may be accounted for satisfactorily by the colder air on elevated places, and by the clouds resting on the summits of mountains without descending into the plains. Hence we may lay it down as a certain fact, both from theory and experiment, that the rains increase with the elevation.

47. If mountains be protected from solar radiation by forests, and if the transpiration from an enormous leaf surface has the same cooling effect as terrestrial radiation, it stands to reason that the effect of elevation (*i.e.* the increase of rain) is still further augmented. We are thus led to the conviction that it is mainly variety of territory, table lands, and mountains whose slopes and summits are covered with wood which encourage and keep up the annual amount of rain.

48. As a proof of this we may instance the provinces of Estramadura and Murcia in Spain where there are mountains that have been stripped of their forests, and where there is frequently now no fall of rain for eight or ten months, and where the prevalence of dry, sultry weather forbids agriculture, while Catalonia and Valencia are covered with wood, and possess a moist and productive soil. It seems therefore unquestionable that the unforesting the slopes and summits of hills and mountains and other elevated lands does actually diminish the mean annual quantity of rain.

49. It thus amounts almost to demonstration that the exertions of man in connection with forests have had and always will have a very material effect in altering the physical character of a country ; it may be for good, it may be for evil. Germany, once a continuous forest, has been greatly improved in climate ; the marshes of Burgundy have been dried up and rendered fit for the cultivation of the vine ; Dauphiné has ceased to be on the borders only of a cultivated country as it was in the time of the Romans ; maize now yields fine crops on the northern side of the Spanish and Italian frontiers, and the chesnut and vine ripen their fruits on the banks of the Rhone and Danube where once they could not have existed.

50. The climate of the United States has become milder since the forests have been destroyed and cleared away ; and vegetables transplanted from Europe which refused to thrive on account of the cold and damp condition of these wooded countries, now easily arrive at a state of perfection. But when we come to consider the effects of such clearings in tropical and sub-tropical countries where the blazing sun pours down his ardent rays on the surface of the ground, we come to the darker side of the picture. Thus the fertile plains on the slopes of Mount Atlas, deservedly called the gardens of the Hesperides, have lost all their fertility with their streams and forests. Thus the Canary Islands, the mountains of Greece, and many countries renowned in ancient history for productiveness and a numerous population, despoiled of their forests, are condemned to the miseries of dearth, drought, and barrenness. The very same causes which have improved the climate of temperate and cold regions render those of the tropics more insufferable.

51. There are places in the tropics, however, which would be improved by being drier than they are, such as the marshy forests of Guiana. It is a very general belief that dense forests are the cause of malaria, and it is very natural to think so when we find such places the chief seat of malaria. But the truth is that we know little or nothing of the origin of malaria. We are certain that it cannot be attributed to growing trees, however dense.

52. In the present state of our knowledge on this subject it would not be philosophic to form any decided opinion, though there is some reason to think that stagnant water, whether in a thick forest or in an open country, may be one of the causes of malaria.

53. When people talk of telluric influences they only invent a name to hide our ignorance, and do not come any nearer a solution of the question.

54. The practical conclusions we should draw from the above remarks are these, that when it is found necessary to denude a district of trees, either for the sake of agriculture or to destroy its unhealthiness, we should encourage the disafforesting of the plains, where water may be stagnant in the soil, and discourage as much as possible the cutting of trees on the slopes of hills, more particularly if they are steep, for there water cannot rest, and we should not be improving, but rather spoiling the climate by the denudation of such places.

55. We can make a practical application of this rule with great advantage in North Canara—a country where the forest is out of all proportion to the population, and where it is desirable that every valley among its hills be cleared of timber.

56. The illustrious Colbert, minister to Louis XIV., was the first to discover that the reduction of forests below present and future wants is one of those misfortunes which it is necessary to prevent—a fault which nothing can excuse, and which can be repaired only by ages of perseverance and privation. The result of Colbert's deliberations was the publication of a most voluminous code of laws called the *Ordonnance* of 1669, which affected not only the forests of the

state, but even those of private proprietors. This code, modified to altered circumstances, and more in harmony with modern legislation, is that which still prevails.

57. The Germans boast that they owe the preservation of their forests to their own good old conservative tendencies ; that they now build their dwellings, warm their bodies, and cheer their spirits by means of the well-cared-for posterity of those very woods in which their ancestors hunted the elk and the urus. But others tell us that Germany has always been overstocked with forest in proportion to the population, and that it was owing to the foresight and good forest regulations of Frederick the Great that their forests have been so well preserved. We learn from the reports of the Paris Exhibition the great value and importance which Austria attaches to her forests, which are there called the sources of the nation's wealth.

58. It is on account of fuel, however, and the absence of extensive coal deposits that Germany generally has been forced to pay so much attention to the preservation and management of her forests. This is evinced by the long establishment of numerous forest officers of every grade, and by the issue of many publications for instruction in forest management by men of science.

59. "As trees (writes Dr. Hartig, a distinguished German author on Forestry) are rooted in the soil, so is the welfare of the German people, with its thousand roots, bound up in our German conservative system of forestry." This would be an extravagant statement in England, but not so in Germany or any other country in which a numerous population is dependent on trees for fuel.\*

60. Although the minute and complicated details of European systems of forest management are not suitable for this country, with its scattered natural forests, yet the general principles on which

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\* The British carboniferous basins may be estimated to embrace some 5,400 square miles of coal ; the French a little less than 1,000, and the Belgium about 510 ; the Bohemian field some 400 ; that of Saxony only 30 ; that of Spain probably 200, and that of all Russia scarcely 100 square miles. Comparing the coal areas with the total surfaces of the respective coal-producing countries, the United States has 1 square mile of coal to each 15 of land ; Great Britain 1 to every 22½ ; Belgium a like proportion, and France but 1 of coal to every 200 of country.



natural forests in all countries ought to be managed are invariable and at the same time few and simple, and I now proceed to state what these are.

61. The first object is not pecuniary advantage in the realizing of a revenue ; public utility is the thing chiefly to be considered ; this principle cannot be contested. There is a permanent necessity for the products of the forests, a demand which, with an increasing population, will never grow less, and the first object should be to have such an extent of forest land under the absolute control of the state as will fulfil this object—that is that the supply shall be sufficient for all wants.

62. The second object is to prevent as much as possible this supply from ever failing at any future time. It must be fostered not only for the present generation, but for posterity. The management should be like that of a charitable institution which can distribute its income without injuring its funds ; the sources of that income, as every overstepping of this boundary, is sure to revenge itself sooner or later.

63. The present generation is the depository of the interests of futurity, and is entitled only to the usufruct. The governments of the present are the proprietors of forests in a different sense to that in which the word proprietor is generally used, and resemble a person who enjoys a life-interest in a sum of money the capital of which is never to be reduced.

64. The lesson taught by a comparison of countries in their ancient and modern condition forces another and important object on our attention, viz. to guard against the denudation of any particular district, so that those salutary effects on the climate and water-supplies which have been already so much dwelt upon may continue permanent. These are all the great principles that demand attention, to which may be added another subordinate to the above, which is that no timber tree should be cut down until it has arrived at maturity, or allowed to remain uncut after it has reached that period.

65. A farmer would be considered insane if he cut down his crop before it was ripe, or if he permitted the over-ripe ears to drop

their contents on the ground before he gathered in his harvest, and yet this insane practice is carried on every day with regard to trees, thousands of which in India are every year lost to the state and to the public by want of attention to the present rule.

66. When a tree ceases to increase in bulk that is a most certain criterion that it has arrived at maturity, and therefore to retain it longer is a loss, for the life of every tree is divided into three periods which may be compared to infancy, manhood, and old age in animals.

67. Practical commentaries on these rules are all that appear to be demanded for the guidance of those to whose control forests are entrusted.

68. It would be no easy task to endeavour to calculate the time that the timber supply of the Bombay presidency will last if the present rate of demand be taken as a guide ; any speculation on such data would be vain, as that demand is increasing at a ratio which for future years it is impossible to calculate.

69. When, however, it is taken into consideration at the same time that the principal jungle districts form a narrow line running north and south ; that from that line chiefly the inhabitants of the treeless northern and eastern parts of the presidency, Cutch and Kattywar, must obtain their supplies ; that Bombay generally is a comparatively dry country ; that our forest trees are consequently much slower in growth than in the more humid parts of the peninsula—then those who know the country will concede that we have not any unnecessary superfluity nor any reason for permitting waste or for neglecting the conservation of any jungle tract.

70. Government have already acknowledged the growing scarcity of timber and firewood throughout the presidency. Such being the case, we must disapprove of any scheme for limiting the extent of forest conservation, for marking off reserves, and leaving the remainder of all forest land beyond the pale of protection. Such a scheme is actually in existence. Fortunately, however, it exists only on paper.

71. The wording of Government resolution No. 3514 of October 1858 would seem to imply that those timber-covered tracts not included in these reserves might be used for destructive cultivation (*koomree* or *dulleran*) ; but as Government have disapproved generally of this mode of cultivation, it would not be legitimate to infer that the reserve scheme was intended to encourage in any way the continuance of a system most injurious to any moderately-wooded country, destructive of valuable property, and tending by the production of a wretched kind of food to depress the physical energies and social well-being of the Indian labourer.

72. Government in the resolution quoted intimated that these reserves should be well defined, and they are so in the village maps, but no where else. The lines and demarcations between forest land reserved and non-reserved are there neatly painted ; we see triangles and polygons in green ; these are the proposed reserves ; but we do not find corresponding lines and figures in nature in the middle of a wooded tract. The scheme if it were practicable would be bad as opening a door to waste as well as fraud ; but it is impracticable. This impracticability of distinguishing such imaginative figures in nature is one of the principal reasons for advocating the expediency of buying up the forest rights of the numerous *inamdars* throughout the country, as their estates are so intricately mixed up with the general forest land of the country as to render proper supervision difficult, while it gives the people opportunities of plundering Government forests under the protection of *inamdars'* passes, which are easily obtained for a trifle paid to their agents.

73. Under all the circumstances now adverted to, along with our diminishing forest resources, it will be acknowledged that it is not *some* forest land that should be under conservation, but all forest land, as long as it is entitled to that character by being covered with trees, whatever destination such land may ultimately have.

74. The government of France (perhaps the most enlightened in matters of forest legislation) so far from leaving out of protection for undefined purposes any parts of their own forests, extend their regulations to the forests of all private proprietors, being convinced of the truth that private interests are often in opposition to the general

well-being of the country, and this has been well exemplified in the past history of the teak forests in the Rutnagherry zilla.

75. Buying up the forest rights of private proprietors is, however, preferable to imitating the example of France. We learn from it, however, that forest legislation should rest upon a broader and more general basis than the present and often short-sighted convenience of an ignorant peasantry, and that along with public convenience must be united the interests of posterity and the conservation of those climatal influences on which agriculture depends.

76. Even landed proprietors in Europe so far from knowing what was advantageous to the state in the matter of forests were often ignorant of what was advantageous to themselves.

77. In France the legislature of 1791, urged by the importunities of landed proprietors, reconsidered the forest regulations framed under Louis XIV. in 1669, and it was decreed that henceforth every citizen should have absolute liberty to cut down his own forests, under the impression that every proprietor was the best judge of the kind of culture which suited his circumstances, and that a man's own interests would be his best guide.

78. Experience however, that touch-stone of all human enterprises, proved that the legislature was wrong. The hope of increasing their income hurried many proprietors into cutting down their woods without consulting the nature and position of the ground, and the forests on the slopes of the mountains did not escape the legalized devastation; the most of them were cruelly punished for their improvidence. The light layer of earth which covered the ground was carried away by the winds and rains, and they saw their property, otherwise productive, struck all of a sudden with eternal barrenness. Prohibitions were soon again introduced (April 1803) and are those still in force, and they are found to be for the interests of all, even of those upon whom they are imposed.

79. To return to our India forests. The smaller tracts of jungle, which, it has been suggested, should be relieved from conservation because they sub-divided too much the attention of the Forest department, should be regarded from a more general point of view, not only as making up a considerable aggregate, and under proper

management affording materials to the ryots, but as having a value of another kind not appreciable to the senses.

80. In conclusion therefore, as far as our first rule is concerned, there ought to be under the direct control of the state as much forest land as is obtainable without the invasion of private rights, and without throwing any restriction in the way of the extension of legitimate cultivation.

81. With regard to the 2nd rule, what practical measures are to be adopted to prevent as much as possible the supplies of forest produce from failing at a future time, they are as follows :—

1st.—By conserving, as has been already said, every patch of forest in the country.

2nd.—By cutting down old hollow and mature trees only, sparing of course all the younger trees.

3rd.—By a total suppression of dullec or destructive cultivation.

4th.—By putting a stop to the pernicious practice of setting fire to the brushwood on the slopes of the hills and to the jungle generally.

82. With regard to rule 2nd, by limiting the cutting to full-grown trees we obtain a more valuable product, whereas in young trees one-half of the ligneous tissue is worthless sapwood; in the mature tree this latter is reduced to a minimum.

83. In Europe the sapwood is carefully rejected from the wood in building, as it is liable to be affected by moisture, worms, insects, and fungus; how much more ought it to be rejected in the tropics where the elements of destruction are far more active.

84. Under this system no forest will disappear, and young trees of the same kinds will spring up in the place where the parent tree dropped its seeds; while by felling the useless kinds of wood for fuel more air and space are given to valuable kinds whose growth is thus materially accelerated.

85. Nothing can be easier of application than to limit the cutting down of trees to those which have reached maturity or have passed that period. To determine this period the judgment must be

guided by experience. The maturity of a tree is dependent on the species, and not on the size to which it may have attained ; and even trees of the same species in different kinds of ground will differ in their age and size at maturity. Thus a teak tree in stony ground and in a dry climate will attain maturity much earlier than in a deep soil and a damp climate, and the former will of course never attain the size of the latter ; even the quantity and specific gravity of the timber will differ under these diverse conditions. A teak tree at seven years of age in Malabar will be of the same dimensions as one of fifteen years in Bombay.

86. The younger timber trees which in the course of time will succeed to those cut down would be greatly advanced and even multiplied by the cutting down of those worthless kinds of trees by which the forests are encumbered—trees which merely take up ground that might be better occupied, and which would be scarcely available as firewood.

87. Hollow trees are exceedingly common in Indian forests ; the roots penetrate into a bad or rocky soil, vigorous growth is impeded and decay, technically called *eremacausis*, commences in the centre or oldest part of the tree, and there is much reason to believe that this decay once begun in the living tree is not arrested by cutting down, but is continued in the dead log as it has no connection with the phenomena of life, but is a purely chemical process.

88. It is necessary here to advert to a practice which has obtained for several years in the Forest department in direct opposition to the principle laid down above, and can scarcely be justified even by the plea of public utility, which, though as already admitted as of the first importance, may be combated in as far as the mode of application is concerned. Allusion is here made to the practice of cutting every year large quantities of young teak trees for rafters. It appears that when this practice commenced it was under the plea of thinning to give more space for others to grow ; but it is in reality in very few places indeed that young teak trees are found so closely set as to require thinning, and where they do not, it is advisable to give up the practice as wasteful, and to allow the trees to attain larger dimensions, and even in a pecuniary point of view it will be

found advantageous ; thus a tree thirty years old will bring four times as much as one of fifteen.

89. Most of the teak trees here alluded to are more properly shoots from the stumps of trees which have been cut down probably in those days when pirate fleets were fitted out in the Concan coast, and which have continued to throw up fresh shoots which have been successively cut down as soon as they reached a marketable age. Thus they resemble osier beds in England, only that instead of being cut annually they have been cut once every fifteen years ; hence their age at present dates from the time when a conservator was first appointed. A few of the original trees may have escaped the general destruction by being either in inaccessible places, or by being protected by those who intended them for their own use.

90. This is all that it seems necessary to say on the subject of the cutting of timber trees, a list of which is appended.\* There are other valuable trees in the forests, which, however, are so local or so scarce as to be more objects of curiosity to the botanist than articles of trade ; such are the Moko, the Rouen, the Toon, the Ebony, Phoorgoos, &c.

#### FUEL.

91. In the days of wasteful extravagance, before the date of conservation, and when the Bombay public were suffering from the *embarras de richesses*, they were so fastidious that nothing would satisfy them but the finest and most durable timber for firewood, such as khair and bibla, and these were formerly plentiful in the market and cheap too. The growing scarcity, increase of population, and concentration have now wrought a great change, and though the kinds now obtainable are comparatively inferior, the price has risen from Rs. 3 to Rs. 8 per candy, or Rs. 24 per ton. This rise in price may have its disadvantages to the public, but it induces a hope that as coal can be obtained at the same rate now, the public of Bombay island will be induced to use it, and thus relieve the forests from the great pressure under which they have been labouring. The consumption of fuel in Bombay cannot be less than 300,000 tons per annum.

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\* Will be printed separately.

92. Valuable and indispensable as supplies of timber may be to a community, they are far surpassed in this respect by fuel, which is one of the prime necessities of life. Partial substitutes may be found for timber in the shape of brick, stone, and iron, but what can be substituted for fuel in the shape of wood, coal, or peat? Hence the necessity of keeping up and regulating the supply of fuel is greater than that for timber.

93. Having reserved certain kind of trees for building purposes, there can be no embarrassment in deciding on what kinds may be allowed to be cut for firewood. All other kinds are consequently available, as well as the branches of those kinds cut for timber purposes only. In keeping up a regular supply two methods present themselves for adoption. The first is to divide any given single district into twenty parts, clear all the firewood trees off one part the first year, another the second, and so on until the firewood has been carried away from all the divisions. The first will thus have had nineteen years rest, and will again be available as at the first. To private proprietors this system offers great advantages, as it secures a regular income.

94. But as even under this system there is unnecessary waste in cutting down for the first nineteen years the young trees with the old, and as Government have not the same need as private individuals of a regular income from this source, it appears preferable to adopt the same system in regard to firewood as to timber trees, viz. to cut down aged, hollow, and mature trees only, and to regulate the amount of the cutting in each particular place by the state of replenishment or otherwise of that place, on which correct local knowledge must be brought to bear.

95. In cutting firewood departmentally, the person who contracts for the supply of the necessary labour must be fully instructed not only as to the kind of trees which are not to be cut for this purpose, but also as to the proper form into which it must be converted to meet the requirements of conveyance and of the chief markets. The wood when cut into billets should be stacked at some convenient spot where pilfering is not likely to take place. These stacks should be all of one size, and the contract should include conveyance and stacking.



96. The pernicious practice of koomree cultivation has been so often dwelt upon in all Indian forest reports, and is so universally condemned, that little need be now said on that subject.

97. The koomree cultivation was on the steep slopes of hills where the plough could not be used. The whole canopy of verdure, trees, and bushes were burnt on the spot, of which the charcoal and ash acted as manure. The place thus denuded and disfigured by the remains of blackened stumps, and exhausted in producing a scanty crop of very inferior grain, was abandoned in a couple of seasons, and new forest land taken up successively to be similarly treated.

98. We quote the opinions of the Forest Commissioners of France on this subject. Addressing the Chamber of Peers in 1827, they thus express themselves :—

“The denudation of the hills excites everywhere universal complaints. Their sterility by the carrying away of the vegetable earth which was retained by the trees,—the diminution of springs,—the augmentation of superficial water,—the formation of torrents which overwhelm properties situate below these elevated places—these are the consequences of the woodcuttings made there, and *it will be against these denudations that the administration will arm itself with severity.*”

99. How much more reason is there in tropical regions to treat the authors of such denudation with severity. Now that our hills are rescued from this destructive system, we can indulge the hope that they may again clothe themselves with wood.

● 100. From another point of view the cultivation of such very inferior grains as ragee, &c. deserves no encouragement. Just as in England, but more particularly Ireland, the moral and social well-being of the labourer is said to have declined in proportion as he has relied upon the potato to the exclusion of better-feeding plants. There is no doubt that similar effects follow the living on these wretched grains, producing a low condition of physique, and a depressed vitality ill-adapted to the demands of continued labour, or to the resistance of those epidemics which so often ravage the country.

101. People who for the first time make a tour by railway as far as Callian have been known to express their disappointment at

the naked and barren character of the hills all around, so very different from the fancied luxuriance of the tropics.

102. Nature it may be replied would soon change their aspect if it were allowed to have full sway; but the bright lines of fire which sweep up these hills from February to April unmistakeably point out the cause of their nudity, and we require no effort of imagination to conceive how the efforts of nature to reclothe them with verdure are thus barbarously thwarted.

103. This the last pernicious practice which calls for notice, and which it is hoped will be suppressed by the local authorities, is not confined to the district indicated, but is pretty general all over the country, and while these lines are being written, reports arrive of many valuable teak trees having been destroyed by fire.

104. Inquiries have been made in vain as to the object of these firings in places where there could not possibly be any grazing, and where the hills were so steep that no cattle could traverse them. In many instances it seems done out of pure mischief.

105. The present Collector of Tanna is the only officer who, as far as we know, has endeavoured to put a stop to this practice; but unless he is cordially supported by the village officers his efforts will do little good.

## APPENDIX A.

## ENGLISH LAW WITH REGARD TO TREES.

*Trees belong to the owner of the soil in which they grow.*—If land is let on lease, neither the landlord nor the tenant can lawfully cut down the trees without the consent of the other; but if the trees are blown down, or are wrongfully cut by the tenant or by a stranger, the wood belongs to the landlord. Bushes and underwood may be cut by the tenant, and the cuttings, whether made by himself or not, belong to him, and not to the landlord. The tenant, moreover, is entitled to the fruit produced on his land during his lease. If an ordinary tenant plants a tree, it becomes a fixture, which he cannot remove without his landlord's leave.

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## APPENDIX B.

Table for finding Cubic contents from the measurement of a Tree, and size of the Log squared from it.

Diameter.	Circumference.	Squares to	Length in Feet.															
			1	2	3	4	5	6	7	8	9	10	20	30	40			
Inches.			Cubic.															
5	16	3 $\frac{1}{4}$	..	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	2 $\frac{1}{2}$	4	5 $\frac{1}{4}$		
6	19	4 $\frac{1}{4}$	..	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	2 $\frac{1}{2}$	4	5 $\frac{1}{4}$		
7	22	5	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	2 $\frac{1}{2}$	4	5 $\frac{1}{4}$		
8	25	5 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	2 $\frac{1}{2}$	4	5 $\frac{1}{4}$		
9	28	6 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	2 $\frac{1}{2}$	4	5 $\frac{1}{4}$		
10	31	7 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	2 $\frac{1}{2}$	4	5 $\frac{1}{4}$		
11	34	7 $\frac{1}{2}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	2 $\frac{1}{2}$	4	5 $\frac{1}{4}$		
12	38	8 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	2 $\frac{1}{2}$	4	5 $\frac{1}{4}$		
13	41	9 $\frac{1}{4}$	1	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	2 $\frac{1}{2}$	4	5 $\frac{1}{4}$		
14	44	10	1	2	3 $\frac{1}{4}$	4 $\frac{1}{4}$	5 $\frac{1}{4}$	6 $\frac{1}{4}$	7 $\frac{1}{4}$	8 $\frac{1}{4}$	9 $\frac{1}{4}$	10 $\frac{1}{4}$	11 $\frac{1}{4}$	12 $\frac{1}{4}$	13 $\frac{1}{4}$	14 $\frac{1}{4}$		
15	47	10 $\frac{1}{4}$	1 $\frac{1}{4}$	2 $\frac{1}{4}$	3 $\frac{1}{4}$	4 $\frac{1}{4}$	5 $\frac{1}{4}$	6 $\frac{1}{4}$	7 $\frac{1}{4}$	8 $\frac{1}{4}$	9 $\frac{1}{4}$	10 $\frac{1}{4}$	11 $\frac{1}{4}$	12 $\frac{1}{4}$	13 $\frac{1}{4}$	14 $\frac{1}{4}$		
16	50	11 $\frac{1}{4}$	1 $\frac{1}{4}$	2 $\frac{1}{4}$	3 $\frac{1}{4}$	4 $\frac{1}{4}$	5 $\frac{1}{4}$	6 $\frac{1}{4}$	7 $\frac{1}{4}$	8 $\frac{1}{4}$	9 $\frac{1}{4}$	10 $\frac{1}{4}$	11 $\frac{1}{4}$	12 $\frac{1}{4}$	13 $\frac{1}{4}$	14 $\frac{1}{4}$		
17	53	12 $\frac{1}{4}$	1 $\frac{1}{4}$	3	4 $\frac{1}{4}$	5 $\frac{1}{4}$	6 $\frac{1}{4}$	7 $\frac{1}{4}$	8 $\frac{1}{4}$	9 $\frac{1}{4}$	10 $\frac{1}{4}$	11 $\frac{1}{4}$	12 $\frac{1}{4}$	13 $\frac{1}{4}$	14 $\frac{1}{4}$	15 $\frac{1}{4}$		
18	57	12 $\frac{1}{2}$	1 $\frac{1}{4}$	3 $\frac{1}{4}$	5 $\frac{1}{4}$	7	8	9	10	11	12	13	14	15	16	17		
19	60	13 $\frac{1}{4}$	2	4	6	8	10	11	12	13	14	15	16	17	18	19		
20	63	14 $\frac{1}{4}$	2 $\frac{1}{4}$	4 $\frac{1}{4}$	6 $\frac{1}{4}$	8 $\frac{1}{4}$	11	13	15	17	19	21	23	25	27	29		
21	66	15	2 $\frac{1}{4}$	4 $\frac{1}{4}$	7 $\frac{1}{4}$	9 $\frac{1}{4}$	12	14	16	18	21	23	25	27	29	31		
22	69	15 $\frac{1}{4}$	2 $\frac{1}{4}$	5 $\frac{1}{4}$	8	10 $\frac{1}{4}$	13 $\frac{1}{4}$	16	18	21	23	25	27	29	31	33		
23	72	16 $\frac{1}{4}$	3	5 $\frac{1}{4}$	8 $\frac{1}{4}$	11 $\frac{1}{4}$	14 $\frac{1}{4}$	17 $\frac{1}{4}$	20 $\frac{1}{4}$	23	26	29	32	35	38	41		
24	76	17 $\frac{1}{4}$	3	6 $\frac{1}{4}$	9 $\frac{1}{4}$	12 $\frac{1}{4}$	15 $\frac{1}{4}$	19	22	25	28 $\frac{1}{4}$	31 $\frac{1}{4}$	34 $\frac{1}{4}$	37 $\frac{1}{4}$	40 $\frac{1}{4}$	43 $\frac{1}{4}$		
25	79	17 $\frac{1}{2}$	3 $\frac{1}{4}$	6 $\frac{1}{4}$	10 $\frac{1}{4}$	13 $\frac{1}{4}$	17	20 $\frac{1}{4}$	23 $\frac{1}{4}$	27 $\frac{1}{4}$	30 $\frac{1}{4}$	34 $\frac{1}{4}$	37 $\frac{1}{4}$	40 $\frac{1}{4}$	43 $\frac{1}{4}$	46 $\frac{1}{4}$		
26	82	18 $\frac{1}{4}$	3 $\frac{1}{4}$	7	11	14 $\frac{1}{4}$	18 $\frac{1}{4}$	22	25 $\frac{1}{4}$	29 $\frac{1}{4}$	33 $\frac{1}{4}$	37 $\frac{1}{4}$	40 $\frac{1}{4}$	43 $\frac{1}{4}$	46 $\frac{1}{4}$	49 $\frac{1}{4}$		
27	85	19 $\frac{1}{4}$	4	8	12	16	20	24	28	31 $\frac{1}{4}$	35 $\frac{1}{4}$	39 $\frac{1}{4}$	42 $\frac{1}{4}$	45 $\frac{1}{4}$	48 $\frac{1}{4}$	51 $\frac{1}{4}$		
28	88	20	4 $\frac{1}{4}$	8 $\frac{1}{4}$	13	17	21 $\frac{1}{4}$	25 $\frac{1}{4}$	30	34 $\frac{1}{4}$	38 $\frac{1}{4}$	42 $\frac{1}{4}$	45 $\frac{1}{4}$	48 $\frac{1}{4}$	51 $\frac{1}{4}$	54 $\frac{1}{4}$		
29	91	20 $\frac{1}{4}$	4 $\frac{1}{4}$	9 $\frac{1}{4}$	13 $\frac{1}{4}$	18 $\frac{1}{4}$	23	27 $\frac{1}{4}$	32	36 $\frac{1}{4}$	41 $\frac{1}{4}$	46	50 $\frac{1}{4}$	54 $\frac{1}{4}$	58 $\frac{1}{4}$	62 $\frac{1}{4}$		
30	94	21 $\frac{1}{4}$	5	9 $\frac{1}{4}$	14 $\frac{1}{4}$	19 $\frac{1}{4}$	24 $\frac{1}{4}$	29 $\frac{1}{4}$	34 $\frac{1}{4}$	39 $\frac{1}{4}$	44 $\frac{1}{4}$	49	54 $\frac{1}{4}$	59 $\frac{1}{4}$	64 $\frac{1}{4}$	69 $\frac{1}{4}$		
31	97	22 $\frac{1}{4}$	5 $\frac{1}{4}$	10 $\frac{1}{4}$	15 $\frac{1}{4}$	21	26 $\frac{1}{4}$	31 $\frac{1}{4}$	36 $\frac{1}{4}$	42	47 $\frac{1}{4}$	52 $\frac{1}{4}$	57 $\frac{1}{4}$	62 $\frac{1}{4}$	67 $\frac{1}{4}$	72 $\frac{1}{4}$		
32	100	22 $\frac{1}{2}$	5 $\frac{1}{4}$	11 $\frac{1}{4}$	16 $\frac{1}{4}$	22 $\frac{1}{4}$	28	33 $\frac{1}{4}$	39	44 $\frac{1}{4}$	50 $\frac{1}{4}$	56	61 $\frac{1}{4}$	67 $\frac{1}{4}$	72 $\frac{1}{4}$	77 $\frac{1}{4}$		
33	104	23 $\frac{1}{4}$	6	12	17 $\frac{1}{4}$	23 $\frac{1}{4}$	29 $\frac{1}{4}$	35 $\frac{1}{4}$	41 $\frac{1}{4}$	47 $\frac{1}{4}$	53 $\frac{1}{4}$	59 $\frac{1}{4}$	65 $\frac{1}{4}$	71 $\frac{1}{4}$	77 $\frac{1}{4}$	83 $\frac{1}{4}$		
34	107	24 $\frac{1}{4}$	6 $\frac{1}{4}$	12 $\frac{1}{4}$	19	25 $\frac{1}{4}$	31 $\frac{1}{4}$	38	44	50 $\frac{1}{4}$	56 $\frac{1}{4}$	63	69 $\frac{1}{4}$	75 $\frac{1}{4}$	81 $\frac{1}{4}$	87 $\frac{1}{4}$		
35	110	25	6 $\frac{1}{4}$	13 $\frac{1}{4}$	20	26 $\frac{1}{4}$	33 $\frac{1}{4}$	40	46 $\frac{1}{4}$	53 $\frac{1}{4}$	60	67	73 $\frac{1}{4}$	79 $\frac{1}{4}$	85 $\frac{1}{4}$	91 $\frac{1}{4}$		
36	113	25 $\frac{1}{4}$	7	14	21 $\frac{1}{4}$	28 $\frac{1}{4}$	35 $\frac{1}{4}$	42 $\frac{1}{4}$	49 $\frac{1}{4}$	56 $\frac{1}{4}$	63 $\frac{1}{4}$	70 $\frac{1}{4}$	77 $\frac{1}{4}$	84 $\frac{1}{4}$	91 $\frac{1}{4}$	98 $\frac{1}{4}$		
37	116	26 $\frac{1}{4}$	7 $\frac{1}{4}$	15	22 $\frac{1}{4}$	30	37 $\frac{1}{4}$	44 $\frac{1}{4}$	52 $\frac{1}{4}$	59 $\frac{1}{4}$	67 $\frac{1}{4}$	74 $\frac{1}{4}$	81 $\frac{1}{4}$	88 $\frac{1}{4}$	95 $\frac{1}{4}$	102 $\frac{1}{4}$		
38	119	27 $\frac{1}{4}$	8	15 $\frac{1}{4}$	23 $\frac{1}{4}$	31 $\frac{1}{4}$	39 $\frac{1}{4}$	47 $\frac{1}{4}$	55	63	71	78 $\frac{1}{4}$	86 $\frac{1}{4}$	94 $\frac{1}{4}$	102 $\frac{1}{4}$	110 $\frac{1}{4}$		
39	122	27 $\frac{1}{2}$	8 $\frac{1}{4}$	16 $\frac{1}{4}$	25	33 $\frac{1}{4}$	41 $\frac{1}{4}$	49 $\frac{1}{4}$	58	66 $\frac{1}{4}$	74 $\frac{1}{4}$	83	91 $\frac{1}{4}$	99 $\frac{1}{4}$	107 $\frac{1}{4}$	115 $\frac{1}{4}$		
40	126	28 $\frac{1}{4}$	8 $\frac{1}{4}$	17 $\frac{1}{4}$	26 $\frac{1}{4}$	35	43 $\frac{1}{4}$	52 $\frac{1}{4}$	61	69 $\frac{1}{4}$	78 $\frac{1}{4}$	87 $\frac{1}{4}$	96 $\frac{1}{4}$	104 $\frac{1}{4}$	112 $\frac{1}{4}$	120 $\frac{1}{4}$		
41	129	29 $\frac{1}{4}$	9 $\frac{1}{4}$	18 $\frac{1}{4}$	27 $\frac{1}{4}$	36 $\frac{1}{4}$	46	55	64 $\frac{1}{4}$	73 $\frac{1}{4}$	82 $\frac{1}{4}$	91 $\frac{1}{4}$	100 $\frac{1}{4}$	108 $\frac{1}{4}$	116 $\frac{1}{4}$	124 $\frac{1}{4}$		
42	132	30	9 $\frac{1}{4}$	19 $\frac{1}{4}$	29	38 $\frac{1}{4}$	48	57 $\frac{1}{4}$	67 $\frac{1}{4}$	77	86 $\frac{1}{4}$	96 $\frac{1}{4}$	105 $\frac{1}{4}$	114 $\frac{1}{4}$	123 $\frac{1}{4}$	132 $\frac{1}{4}$		
43	135	30 $\frac{1}{4}$	10	20 $\frac{1}{4}$	30 $\frac{1}{4}$	40 $\frac{1}{4}$	50 $\frac{1}{4}$	60 $\frac{1}{4}$	70 $\frac{1}{4}$	80 $\frac{1}{4}$	90 $\frac{1}{4}$	100 $\frac{1}{4}$	110 $\frac{1}{4}$	120 $\frac{1}{4}$	130 $\frac{1}{4}$	140 $\frac{1}{4}$		
44	138	31 $\frac{1}{4}$	10 $\frac{1}{4}$	21	31 $\frac{1}{4}$	42 $\frac{1}{4}$	52 $\frac{1}{4}$	63 $\frac{1}{4}$	74	84 $\frac{1}{4}$	95	105 $\frac{1}{4}$	115 $\frac{1}{4}$	125 $\frac{1}{4}$	135 $\frac{1}{4}$	145 $\frac{1}{4}$		
45	141	32 $\frac{1}{4}$	11	22	33	44 $\frac{1}{4}$	55 $\frac{1}{4}$	66 $\frac{1}{4}$	77 $\frac{1}{4}$	88 $\frac{1}{4}$	99 $\frac{1}{4}$	110 $\frac{1}{4}$	121 $\frac{1}{4}$	131 $\frac{1}{4}$	141 $\frac{1}{4}$	151 $\frac{1}{4}$		
46	144	32 $\frac{1}{2}$	11 $\frac{1}{4}$	23	34 $\frac{1}{4}$	46 $\frac{1}{4}$	57 $\frac{1}{4}$	69 $\frac{1}{4}$	80 $\frac{1}{4}$	92 $\frac{1}{4}$	104	115 $\frac{1}{4}$	126 $\frac{1}{4}$	137 $\frac{1}{4}$	147 $\frac{1}{4}$	157 $\frac{1}{4}$		
47	148	33 $\frac{1}{4}$	12	24	36	48 $\frac{1}{4}$	60 $\frac{1}{4}$	72 $\frac{1}{4}$	84 $\frac{1}{4}$	96 $\frac{1}{4}$	108 $\frac{1}{4}$	120 $\frac{1}{4}$	132 $\frac{1}{4}$	143 $\frac{1}{4}$	154 $\frac{1}{4}$	164 $\frac{1}{4}$		
48	151	34 $\frac{1}{4}$	12 $\frac{1}{4}$	25	37 $\frac{1}{4}$	50 $\frac{1}{4}$	63	75 $\frac{1}{4}$	88	100 $\frac{1}{4}$	113	125 $\frac{1}{4}$	137 $\frac{1}{4}$	148 $\frac{1}{4}$	159 $\frac{1}{4}$	169 $\frac{1}{4}$		



**SELECTIONS FROM THE RECORDS OF THE BOMBAY  
GOVERNMENT.**

**No. LXXVII.—NEW SERIES.**

**P A P E R S**

**RELATIVE TO THE**

**IMPROVEMENT OF THE FOREST REVENUE**

**OF THE**

**P U N C H M A H A L S.**

  
**WITH ONE MAP.**  


**Bombay:**

**PRINTED FOR GOVERNMENT**

**AT THE EDUCATION SOCIETY'S PRESS, BYCULLA.**

**1863.**



*Extract (paragraphs 1, 8 to 11, and 13) of a Letter from the POLITICAL  
AGENT IN THE REWA KANTA, No. 51, dated 21st January 1862.*

PARAGRAPH 1. I have the honour to lay before the Honourable the Governor in Council the two following proposals for the improvement of the land revenue of the Punch Mahals. These two proposals comprise in detail the measures which it appears to me should now be adopted for the promotion of immigration, and to regulate the sale of timber, until the latter subject can be taken up by the Forest department.

*Sale of Timber.*

8. I have now the honour to submit a few remarks upon the valuable acquisition in timber which has accrued to Government in these districts since the introduction of the Railway as a further means of improving the revenue.

9. Before the demand for sleepers, these tracts of forest yielded a very small return to the late Government. There was no attempt at conservancy; timber as property, with the exception of teak, was held to be of no account both in this and the adjoining native states, and realized only an average of fourteen annas export duty per cart-load. There has been no restriction as to cutting by any inhabitant or speculator whatever. A railway contractor has now been engaged for some time in felling timber for sleepers from these jungles for delivery at Aunund and Baroda, and must have realized a considerable sum. My information is not complete, but from personal inspection and inquiry I expect to find that at a contract price of two rupees and ten annas per sleeper the contractor can afford to pay all expenses, and deliver each sleeper at either of the above-mentioned places at a net profit of fourteen annas per piece. The Government interest at present in the trade is something less than two annas per piece in the northern districts, and for sleepers produced at Tullowree in the Naikra country five pies only. It is obvious that valuable property



belonging to Government, under these circumstances, is being diverted to private hands to large amounts, and I have therefore guaranteed to the contractor his stock in hand only, and have reserved the subject for revision on the completion of my inquiries. The accumulating stock of the contractor after the issue of my order on the subject is to be separate and under the supervision of the Customs department. I anticipate that not two but seven to eight annas can be realized on each sleeper either by public auction, or, probably still better, by a stipulation for a half-share in the profits free of expense. I foresee and disregard the interested objections which will be made. It will be said that the British Government is raising its export duty, which will be true so far as that is the readiest means of realizing the value of the Government property in timber, but the cost to the Railway Company will not be increased, as it is out of the question to suppose that a contractor could not be found to supply sleepers at a net profit of from seven to eight annas per piece. An ingenious remark was made to me last rains by the contractor (a Parsee) in deprecating any increase upon the timber tariff. He said, "Why, I shall be clearing your jungles for you." Nothing could be more fallacious, for while he carries away the best wood, he leaves all the scrub and the jungle as thick as before.

10. In order to secure the sale of the Government wood at a fair price, it will be necessary to protect it by raising the duty upon Barreah and Oodeypoor sleeper timber in transit. Both these states produce the article in large quantities; they are further removed from the Railway than the Punch Mahal forests, and have no outlet except through our districts. Tributary states have not the power of raising the tariffs or they would no doubt have done so on the occurrence of the present demand. Up to this time timber fit for sleepers has been of no value in the native states in which it is produced until it is exported, and the petty states above-mentioned have realized no more than fourteen annas per cart-load on export. But it will be for Government to determine upon the participation in profits from this source by the chiefs concerned on the raising of our tariff. The only object of revising our tariff is to prevent the destruction of our own forests, not for the interests of the Railway Company, but in those of the private speculator; for I am thoroughly

convinced that I shall be able immediately to conclude an arrangement by which the Government will secure a half-share in the profits arising from the cutting of sleepers at the current contract rate, viz. Rs. 2-10 on delivery.

11. I do not propose in this report to revise the present rates upon the export of teak either from our own or from native territory; they are more remunerative, and I think should be reserved for further consideration and report by the Conservancy department.

13. And with regard to the latter section of this report, I would suggest that an experienced officer of the Forest department should be deputed to report upon the subject, and especially to inform Government of the advantages, or otherwise, of introducing an establishment for the conservancy of teak. This wood is not felled for sleepers probably because the size is inadequate, or, if that be not the case, because good pieces are too valuable for that trade. Teak in any form is at present exported at very much higher prices than those which obtain in the export of timber for sleepers, the one being called hard and the other soft wood, though the latter term is a misnomer.

No. 897 OF 1862.

REVENUE DEPARTMENT.

To Major C. BUCKLE,

Political Agent in the Rewa Kanta.

SIR,—I am directed to acknowledge the receipt of your letter No. 51, dated the 21st January last, submitting proposals for the promotion of immigration, and for the regulation of the sale of timber in the Punch Mahals.

2. Before issuing any orders on the first of the proposals submitted by you, His Excellency in Council desires to know what the tenure of lands is in the Punch Mahals, and I am therefore instructed to request that you will have the goodness to furnish information on this point.

3. As regards the forests, I am desired to inform you that the Governor in Council is of opinion that the utmost care should be taken in the Punch Mahals to preserve the forests from injurious treatment, and to ensure a fair revenue from them to the state. The Acting Conservator has therefore been requested to visit these forests as soon as possible, and to lay down some plan for their conservation by which Government may maintain an effective control over them and prevent devastation.

4. In the meantime His Excellency in Council is pleased to authorize you to entertain any establishment you may deem necessary (to be reported to Government without delay after organization) for the immediate conservation of the timber of all kinds, and for the assertion of the rights of Government.

5. The Superintendent of the Revenue Survey and Assessment in Gujarat has been instructed to introduce the survey into the Punch Mahals as soon as he can find opportunity.

6. The alienations will be settled under the summary settlement proceedings.

I have the honour to be, &c.

J. B. PEILE,

Acting Under-Secretary to Government.

*Bombay Castle, 3rd March 1862.*

No. 195 of 1862.

REVENUE DEPARTMENT.

From Major C. BUCKLE,

Political Agent in the Rewa Kanta,

To A. D. ROBERTSON, Esq.,

Acting Chief Secretary to Government, Bombay.

SIR,—With reference to paragraphs 3 and 4 of Mr. Peile's letter No. 897, dated 3rd instant, and paragraphs 9, 10, 11, and 12 of my letter No. 51, dated 21st January last, I have the honour to report

that I find it expedient to request the postponement of direct measures of forest conservancy until the report of the Conservator is obtained.

2. I have taken all the best opinions available in this part of the country, and I find that the trade of felling timber for export is mainly carried on by the turbulent classes claiming a prescriptive right, and that the question is whether the conserved timber is likely to be of sufficient value to risk a collision with them. The Deputy

Collector writes :—" Whenever therefore the Bhels are made aware of the object in view, their first consideration short of

taking any extreme measure will be to remove themselves to the adjacent districts subject to foreign control, where a free and unrestricted privilege of felling and disposing of timber will be allowed them, and the result will be a diminution, instead of an anticipated increase, of the Punch Mahal revenue."

3. There is truth in these remarks, and I think it is desirable to know what is the real value of the forests before taking any decided step towards restriction.

4. In the meantime the indirect measures I have adopted to turn the timber to account appear after a two months' experience to work well. There is considerable rise in the revenue without any extra expense, and without interfering with the real or supposed rights of any one. The Customs establishment offered the opportunity, and during its temporary existence I would submit that it is better for the present to use it for the indirect sale of timber by taxation on export until the report of the Conservancy department is before Government. I have now the honour to report in detail what those measures are :—

1st.—Permission to export sleepers at the existing rate, which produced no more than two annas per piece, was discontinued on the 18th January 1862.

2nd.—A monopoly of export of sleepers was given to the firm of Messrs. Goolam Hoosein Lookmanjee and Ubdoo Ruheem Bhaeejeebhaee, the sayer contractors, experimentally for four and a half months at a profit of eight annas per sleeper to Government.

No. 74, dated 13th March 1862.

30th January 1862.

3rd.—A revision of the export and transit rates, which were far too low in proportion to the demand, was made provisionally. The following is the contrasted statement :—

*Export duty on a Cart-load of Teak.*

Formerly levied.			Present Rates.		
Average . . . .Rs.	0	9	2	Large cart . . . .Rs.	1 12 0
				Bheel kolce do.	1 10 0

*Export duty on Timber other than Teak.*

Formerly levied.			Present Rates.		
Average . . . .Rs.	0	6	8	Large cart . . . .Rs.	1 6 0
				Bheel kolce do.	1 4 0

*Transit duty on a Cart-load of Teak.*

Formerly levied.			Present Rates.		
Average . . . .Rs.	0	10	0	Large cart . . . .Rs.	1 12 0
				Bheel kolce do.	1 10 0

*Transit duty on Timber other than Teak.*

Formerly levied.			Present Rates.		
Average . . . .Rs.	0	6	9	Large cart . . . .Rs.	1 6 0
				Bheel kolce do.	1 4 0

5. The probable results of these measures are detailed in the following figures :—

Amount of Duty realized in the year ending 5th June 1861.	Amount of Duty, inclusive of manufactured Sleepers, expected in the year ending 5th June 1862.
Newsyasae Rs.. 10,804 7 10	Actually realized up to February 1862. . . . .Rs. 7,897 8 0
	Probable receipt in March . . . . .5,000 0 0
	April . . . . .3,000 0 0
	May to 5th June . . . . .2,000 0 0
	Rs. 17,897 8 0

Should Government be pleased to sanction these temporary arrangements, the receipts from timber will no doubt reach Rs. 20,000 for the year ending 5th June 1863.

6. I do not presume to say that this arrangement can be of a permanent nature. The transit duties will no doubt be abandoned in due time; but in the meantime I believe that the temporary measure I have the honour to recommend avoids all the difficulties and secures the object. It avoids in the first place the discontent which I fear from conservancy—the being under-sold by petty states,—and it raises the revenue in a considerable degree. It is also in itself eminently in accordance with native views of sovereign rights. I should be very glad to see the opinion of the Forest department upon the jungles in Godra, as the political objections there to the preservation of teak are less than elsewhere; but in that quarter my views tend more towards the promotion of immigration from Kaira, and consequent clearances, than to conservancy in the absence of adequate data on the latter subject.

7. In Jambooghorra\* and Dhurola (the Naikra country) the modified rates given below are considerably lower than in the Punch Mahals—not on account of any expected opposition, but because there is a road *viâ* Jabboogaum in Oodeypoor to Baroda which would ruin the tolls *viâ* Janbooghorra and Dhurola:—

*Export duty on a Cart-load of Teak at Jambooghorra.*

Formerly levied.	Present Rates.
....	Rs. 0 12 0

*Export duty on Timber other than Teak.*

Formerly levied.	Present Rates.
....	Rs. 0 8 0

*Transit duty on a Cart-load of Teak at Jambooghorra.*

Formerly levied.	Present Rates.
Rs. 0 8 0	Rs. 0 12 0

*Transit duty on Timber other than Teak.*

Formerly levied.	Present Rates.
Rs. 0 4 0	Rs. 0 8 0

*Export and Transit duties on a Cart-load of Teak at Dhurola.*

Formerly levied.	Present Rates.
Rs. 0 12 0	Rs. 1 0 0

*Export and Transit duties on Timber other than Teak.*

Formerly levied.	Present Rates.
Rs. 0 7 0	Rs. 0 11 0

I have the honour to be, &c.

C. BUCKLE,  
Political Agent.

*Rewa Kanta Agency, Camp Veerumpoor,*  
25th March 1862.

No. 1638 of 1862.

## REVENUE DEPARTMENT.

To

The REVENUE COMMISSIONER, Northern Division.

The POLITICAL AGENT, Rewa Kanta.

The ACTING CONSERVATOR OF FORESTS, with copy of the Revenue Commissioner's memorandum and accompaniment.

*Copy of the Resolution passed by Government on the foregoing documents.*

The provisional measures adopted by Major Buckle are approved.

2. Copy of these papers to be sent to the Acting Conservator, who should take the earliest possible opportunity of visiting the forests, and submitting his report, which should not contemplate

only present income to Government, but by what means the forests can best be preserved, even at a present sacrifice, so that the income may become permanent, and the forests be preserved.

J. B. PEILE,

Acting Under-Secretary to Government.

*Bombay Castle, 24th April 1862.*

No. 229 OF 1863.

To the SECRETARY TO GOVERNMENT, Revenue Department.

SIR,—According to the instructions of Government as per margin, I have the honour to submit the following observations on the jungles of the Punch Mahals, the examination of which I have just finished.

Government resolutions Nos. 1638 and 432, dated 24th April 1862 and 11th February 1863.

2. The whole country north of the river which runs east and west past Godra up to the boundaries of the district may be characterized as an open jungle, full of a great variety of trees, many of which are of very valuable kinds.

3. I subjoin a list of the valuable kinds observed in the order of their frequency, and it will be seen that teak stands second in the list. In fact teak is to be seen everywhere, and in many places to the exclusion of everything else.

4. As however, according to Major Buckle's report, the turbulent classes have not only claimed, but exercised, a prescriptive right of cutting timber, it was scarcely to be expected that there could be any teak timber (properly so called) left in the jungle.

5. In fact the teak trees have never been allowed to grow into timber at all, for no sooner had the young trees reached a marketable size (the thickness of one's wrist) than the villagers cut them down and sold them.



6. Teak trees, as is well known, have the property of sending up fresh shoots from their stumps, and as soon as these became saleable, they were in their turn cut down and sold, and so on during every successive growth.

7. In short, the trees in that country have been a kind of charitable fund to a race scarcely reclaimed from barbarism, and most especially disinclined to steady and continued labour.

8. The result of this successive hacking and mutilation of the teak is the existence at this present time of millions of cankered stumps.

9. So little has the teak been thought of, that in some parts it is used as firewood and for fencing the few fields that are to be met with.

10. In one place however, which, from some superstitious feelings, has been tabooed, the teak trees were very fine, growing up into clean straight spars, which will be very valuable.

11. In the Mehlole district too, which is the property of a Thakoor, I found the teak everywhere preserved, and promising to be in a few years a valuable source of revenue.

12. I need scarcely add that with the exception of these and one or two spots in the north-east corner of the district at Wundellce, the teak, as described, is at present worthless.

13. If political considerations will allow it (and I think the example of the Thakoor of Mehlole is encouraging), I would recommend that no one be allowed to cut teak for sale or export except it be of mature growth, and that the inhabitants of the district should be enjoined not to waste or destroy the teak for any domestic purposes under some penalty.

14. It is difficult to say to what size teak will grow in the Punch Mahals in average places, as the soil is mostly composed of the débris of granite and quartz rocks, and in many places of no great depth; still the shortest time to which the prohibition ought to be restricted is sixteen to twenty years.

15. I have no hesitation in saying that if the trees are strictly conserved for that period, they will be worth twenty lakhs of rupees at a rough calculation.

16. Having visited the Punch Mahals just after they had been ransacked for sleepers for a period of two years, and after a hundred thousand of these had been carried away, it will be admitted that I saw these jungles under rather unfavourable circumstances, when nearly all the larger specimens of other valuable timbers had been cut down.

17. Still these jungles are well stocked with the different kinds mentioned in the list, several of which, though not generally to be found in the market, are as valuable as teak itself, and equally indestructible.

18. It was evident that the contractor for sleepers had made a good use of his time, for of the jungle kinds, as they are called, there were very few to be seen large enough for that purpose.

19. In order to prevent the cutting down of immature trees, which is of course bad economy, I would apply the following rule to all the kinds of timber mentioned in the list.

20. That no tree be allowed to be cut for the purposes of trade (export) of less circumference than four feet.

21. This rule allows of the inhabitants cutting junglewood for their own houses and for agricultural purposes.

22. There will be thus a small, but continual, supply of mature jungle timber to meet a demand that will also be continual, viz. for railway purposes. But it is more than probable that contractors, &c. will for some years find it more profitable to obtain timber for sleepers from the contiguous foreign territory (Barryah jungle), where, it is said, all kinds of timber are to be had in profusion, and in fact from which now most of the wood which pays transit duty comes *via* Renna *en-route* to Ahmedabad.

23. I have said that the whole country north of the Godra river is one continuous jungle. Of course the clearings round the hamlets must be excepted, and these appear to me to be very great in proportion to the population. It may, however, be well accounted for if each field is cropped only once in four or five years.

24. In addition to the jungle north of Godra, there is an extensive jungle north and east of Champaneer, consisting principally of

khair trees, which will of course come under the same rules as other hard woods.

25. To show the extent of the trade in timber (chiefly teak logs and rafters), I saw at Renna, which is one of the gates of the country leading to Ahmedabad, fully half a square mile of carts laden with timber, most of which was from Barryah, and where a speculator had established himself to take advantage of the abundant supply and no competition.

26. For two or three seasons the growing teak-shoots require trimming, as they are now growing in the wildest manner, and the natives might be employed in this duty under foresters; it is a kind of labour they like, and I need not say how handy they are with their axes.

27. The Medical Stores, I may add in conclusion, might be supplied with unlimited quantities of the Bèl fruit, so useful in dysentery, and the fruit is now ripening.

28. The regulation of the fees, if the jungles are to be under conservation (as I hope they will be), will be a matter for future consideration.

I have the honour to be, &c.

N. A. DALZELL,  
Conservator of Forests.

*Conservator of Forest's Office, Camp Surat,*  
6th April 1863.

*LIST of useful TIMBER TREES in the PUNCH MAHALS in the order of their frequency.*

- |    |                            |   |
|----|----------------------------|---|
| 1. | Pullus or Kakria . . . . . | } Immense quantities of this have been cut down.                      |
|    | Butea frondosa . . . . .   |   |
| 2. | Teak or Sāg . . . . .      | } Extremely plentiful; crooked and cankered stumps with young shoots. |
|    | Seetona grandis . . . . .  |   |
| 3. | Bèl tree . . . . .         | } Exceedingly plentiful in all the jungles.                           |
|    | Ægle marmelos . . . . .    |   |

- |     |                                    |  |
|-----|------------------------------------|--|
| 4.  | Mowhra . . . . .                   | } Plentiful. Timber fine and large.  |
|     | Bassia latifolia . . . .           |  |
| 5.  | Temroo or Ebony.                   | } Very common; yields fine ebony and eatable fruit.                                      |
|     | Diospyros exculpta.                |  |
| 6.  | Beca or Bibla . . . .              | } Plentiful. Timber very superior.   |
|     | Pterocarpus mar-sapium . . . . .   |  |
| 7.  | Rouen . . . . .                    | } Plentiful in some parts. Wood very fine and heavy, weighing 76 lbs. to the cubic foot. |
|     | Soymida febrifuga.                 |  |
| 8.  | Dantia or Asanna.                  | } Not common.  |
|     | Birrdelia montoma.                 |  |
| 9.  | Kumdee or Cullum.                  | } Found here and there; is much used in the Gun-Carriage department.                     |
|     | Nauclea parviflora.                |  |
| 10. | Khair . . . . .                    | } Plentiful, but not of large size.  |
|     | Acacia catechu . . . .             |  |
| 11. | Moka . . . . .                     | } Not very plentiful except in some localities. Wood very fine.                          |
|     | Schrebera Swietci-voides . . . . . |  |
| 12. | Khaygur . . . . .                  | } A most beautiful timber; new to Bombay.  |
|     | Acacia verek . . . .               |  |

No. 256 of 1863.

REVENUE DEPARTMENT.

From Lieutenant Colonel J. T. BARR,  
Acting Political Agent in the Rewa Kanta,

To A. D. ROBERTSON, Esq.,  
Secretary to Government, Bombay.

SIR,—I have the honour to submit for the consideration of Government a report on the Punch Mahal forests, framed in obedience to the orders conveyed by Government resolution No. 432, dated the 11th of February last.

2. The subject in its scientific bearing has been left to the judgment of Mr. Dalzell, and I have addressed myself to the question of how measures of conservancy can best be adopted without causing suspicion or discontent amongst the rude tribes of Koolies, Bheels, and Naikras who inhabit these wooded tracts, and who for ages have been allowed to regard them as their peculiar domain.

3. I have studied the recorded opinions of Colonel Wallace and Major Buckle, and sought advice from native officials and others whose experience is to be trusted, and from all the information I have collected it is clear to me that it would be very unwise to resort suddenly to stringent measures of forest conservancy calculated to surprise and alarm the people.

4. To meet the ends of conservancy under present circumstances, and to avoid giving occasion to the sensation I allude to in the districts to be brought under the operation of our rules, it will be sufficient (as a beginning at all events) simply to issue a notification that no wood cut from trees in the Punch Mahals of less circumference than four feet, as stated in the 20th paragraph of Mr. Dalzell's report, can be exported.

5. Such notification would in no way interfere with wood-cutting for consumption within the limits of the Punch Mahals, and yet by the restriction on the export trade, it would very greatly add to the number of trees allowed to grow to maturity.

6. The Koolies, Bheels, and Naikras who cut and sell trees of small growth would find their trade uninjured, for from the contiguous jungles of native chiefs, such as the Raja of Barryah and others, they may continue to procure ample supplies, to be passed through the Punch Mahals on payment of the established transit duties.

7. It will be easy by means of the posts now stationed on the inlets to distinguish wood cut beyond the Punch Mahal frontier, and the native jurisdictions outside will from self-interest give every encouragement to the cutting of wood within their own limits.

8. After a time the natives may be employed, as suggested by Mr. Dalzell in his 26th paragraph, in trimming trees under foresters, and gradually, I have no doubt, trees of large growth will become more and more numerous; but at first the prohibition against exportation, and the supervision of district native officials, are the only measures I would advise.

I have the honour to be, &c.

J. T. BARR, Lieut. Colonel,  
Acting Political Agent.

*Rewa Kanta Agency, Camp Pawaghur,  
30th April 1863.*

*Forests.*

No. 1751.

#### REVENUE DEPARTMENT.

*Bombay Castle, 28th May 1863.*

Letter from the **CONSERVATOR OF FORESTS**, No. 229, dated the 6th April 1863—Re-

Resolution No. 1638, dated 24th April 1863.

Resolution No. 432, dated 11th February 1863.

porting, in pursuance of the instructions of Government noted in the margin, on the conservancy of the Forests in the Punch Mahals, remarking on the indiscriminate cutting of Teak trees, before they grow into timber, carried on in those Forests, and recommending for adoption a rule, in regard to all kinds of timber, that no tree be allowed to be cut for the purposes of trade (export) of less circumference than four feet.

Letter from the **ACTING POLITICAL AGENT**, Rewa Kanta, No. 256, dated 30th April 1863—Stating that to meet the ends of conservancy under the present circumstances, and to avoid giving occasion to surprise and alarm the people, it will be sufficient, as a beginning at all events, simply to issue a notification that no wood cut from trees in the Punch Mahals of less than four feet can be exported.

**RESOLUTION.**—Before any orders can be issued in this matter, His Excellency in Council is of opinion that further information is required on several points.

2. The case of the Mchhole district, referred to in paragraph 11 of Mr. Dalzell's report, proves that measures of conservancy may be

introduced and adopted, and therefore, before subscribing to the opinion of Lieutenant Colonel Barr—that it would be unwise to resort to such measures as being calculated to surprise and alarm the Bheel population of these districts,—His Excellency in Council considers that it would be useful to inquire and ascertain the measures adopted by the Thakoor of Mehlole for the preservation of the teak in his district.

3. It is also further desirable that Government should know the amount of the population who obtain a livelihood by cutting timber in the forests of the Punch Mahals, and what income it is supposed they usually make from this source; to whom they sell the timber they cut, and at what rates; and also at what periods of the year they employ themselves in cutting wood in the forests.

4. The Governor in Council further desires to know whether these classes might not still be allowed to follow their employment, but under restrictions which, while they would not interfere with their gaining a livelihood as heretofore, would prevent a reckless destruction of valuable timber, and which would require that they should conduct the felling of the restricted descriptions of timber under supervision, and that they should make over to Government any such timber they may cut at rates equal to those which they may have hitherto received from private individuals.

5. If this could be done, the Governor in Council sees no reason why such an important measure as the proper conservation of these valuable forests should be indefinitely delayed. Under some such system the powers of the population who have hitherto subsisted in part on the appropriation of the produce of the forests might be turned to useful account without injury to themselves, and with great public benefit.

6. If the plan suggested be found practicable, it would be desirable that the timber of the restricted descriptions should be brought to depôts, and there disposed of by periodical auction sales.

7. In the meantime the rule proposed by Mr. Dalzell in his 20th paragraph, that no tree of less circumference than four feet be allowed to be cut for the purposes of trade (export), should at once be adopted.

8. With reference to the instructions conveyed in the despatch\* from Her Majesty's Secretary of State (No. 11, dated 30th March 1863), calling the attention of Government to the propriety of leasing the forests of Bhcel chiefs and others, His Excellency in Council would desire to be informed whether the forest of the Thakoor of Mehlole might not be leased, and if so, on what terms.

A. D. ROBERTSON,  
Secretary to Government.

To

THE CONSERVATOR OF FORESTS (with a copy of Lieutenant Colonel Barr's letter).

THE POLITICAL AGENT, Rewa Kanta.

\* Copy sent with Government resolution No. 1658, dated 21st May 1863.





SELECTIONS FROM THE RECORDS OF THE BOMBAY  
GOVERNMENT.

No. LXXVIII.—NEW SERIES.

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R E P O R T

ON THE SUBJECT OF THE

RAIN-FALL IN THE DEKHAN,

AND THE

CLIMATIC DISTURBANCE

APPARENT DURING

1861 & 1862.



Bombay:

PRINTED FOR GOVERNMENT  
AT THE EDUCATION SOCIETY'S PRESS, BYCULLA.

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1863.



No. 302 of 1863.

PUBLIC WORKS DEPARTMENT.

TO THE CHIEF ENGINEER AT THE PRESIDENCY,

Bombay.

SIR,—I have the honour to forward documents as per margin,

Circular letter No. 209 to 215, from the Superintending Engineer for Irrigation, to Civil Surgeons, dated 29th April 1863.

Letter No. 25 dated 6th May 1863, with a Return of rain-fall from the Civil Surgeon Dhoolia.

Letter No. 33 dated 2nd May 1863, with a Return of rain-fall from the Civil Surgeon Ahmednuggur.

Return of rain-fall during 1861 and 1862, from the Civil Surgeon Poona.

Return of rain-fall from 1853 to 1862, from the Civil Surgeon Sholapoor.

Letter No. 35 dated 5th May 1863, with 2 Returns of rain-fall from the Civil Surgeon Sattara.

Return of rain-fall during 1861 and 1862, from the Civil Surgeon Belgaum.

Return of rain-fall during 1861 and 1862, from the Civil Surgeon Dharwar.

on the subject of the rain-fall in the Dekkan and the climatic disturbance apparent during the years 1861 and 1862.

2. Appended to this letter are some brief notes on the rain-fall in each of the Col-

lectorates of Khandesh, Ahmednuggur, Poona, Sholapoor, Sattara, Belgaum and Dharwar, in which I have endeavoured to point out the most remarkable features of each case, and I think it will be evident that the climatic disturbance is more remarkable than many who have not the rain registers in their possession are inclined to believe. In looking over the various rain-fall registers, it will be apparent that though nearly every year there is some considerable difference in the rain-fall, there are I think no two successive years in which such remarkable distinctions are evident throughout the Dekkan as 1861 and 1862. It is certainly true that though Sattara

in 1861 shows the same result as five of the other Collectorates, in 1862 it differs materially ; and also that Sholapoor differs from the other Collectorates in showing a less than average rain-fall during both those years. But still these slight exceptions amidst so many corresponding results should not have too much weight attached to them. It would indeed have been most extraordinary had there not been some slight exceptions where the number of observations is so great.

3. I am not bold enough to predict a drought and famine during the present year, but I will venture so far as to say that if a conclusion is to be drawn at all from the data collected, and which is of course very imperfect for so abstruse a question, it is certain that the chances this year are in favour of a drought and famine.

4. I forward this subject for any notice you may think it deserves. I am so strongly impressed myself with the prospect of a drought, that I cannot help considering what works might be undertaken in my department to relieve the distress, and what agency I should have to employ to get several large new works suddenly commenced and carried on with all possible despatch.

5. It will be observed how much I am indebted to the Civil Surgeons at the various stations through whose kindness I have been enabled to compile the information now submitted to you.

I have the honour to be,

Sir,

Your most obedient Servant,

J. G. FIFE, Captain R. E.,

Superintending Engineer for Irrigation.

*Office of the Superintending Engineer for Irrigation,  
Kirkee, 15th June 1863.*

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NOTES ON THE RAIN FALL IN KHANDESH AND THE DEKKAN,  
COMPILED FROM OBSERVATIONS BY THE CIVIL SURGEONS  
AT THE VARIOUS STATIONS.

KHANDESH.

In Khandesh the rain fall in 1861 was 23·15 inches, being the heaviest experienced since 1854 when there were 25·12 inches.

Of the 23·15 inches in 1861 about  $10\frac{1}{2}$  inches fell in June,  $3\frac{1}{4}$  in July,  $5\frac{3}{4}$  in August and  $2\frac{1}{4}$  in September. This distribution may be regarded as seasonable.

In 1862 the total fall was 19·11 inches. This slightly exceeds the average of the preceding eleven years. But in 1862 the fall was unseasonable. In June, July and August only 4·44 inches, while in September, October and November there were 14·00 inches.

AHMEDNUGGUR.

At Ahmednuggur the fall in 1861 was 36·76, being the greatest fall since 1857, when 36·23 inches fell. In 1862 the fall was 27·02 inches, of which only 8 inches fell in June, July and August. In September nearly 9 inches fell, and in October  $8\frac{1}{2}$ . The total fall in 1862 was equal to that of ordinary seasons, but it fell unseasonably. The greater part falling after the usual monsoon period had passed.

The Civil Surgeon at Ahmednuggur remarks that in Sind, where he was stationed in 1861 and 1862, he observed the same irregularity in the rain fall.

POONA.

At Poona the fall in 1861 was 46·56, being the greatest recorded since 1855, and even then the fall was only 31·05 inches. In 1861 therefore the fall was extraordinarily large. In 1862 the fall was 27·18 which though small compared to the previous year, was really

in excess of the average fall during the previous six or seven years. The average of the previous seven years comprising the extraordinary season of 1861 was 21·85 inches. The average of six years excluding 1861, was only 21·48 inches.

In 1862, though the fall was in excess of the average, there was but little rain during the regular monsoon months. In June, July and August only about  $8\frac{1}{2}$  inches fell. During the same period of the previous year there were nearly  $25\frac{1}{2}$  inches. The season of 1862 was therefore marked by a more than average fall of rain, which however fell unseasonably.

### SHOLAPOOR.

At Sholapoor the fall in 1861 was 26·47. This was less than the average of the preceding eight years which was 29·20, but the fall in 1861 was seasonable, nearly 19 inches fell in June, July and August.

In 1862 the fall was 23·74. This was very far short of the average fall and it was also unseasonable. In June, July and August only about  $6\frac{1}{2}$  inches fell.

The fall in 1862 was the most deficient recorded since 1855 when only 13·65 inches fell. During that year only about  $4\frac{3}{4}$  inches fell in June, July and August.

### SATTARA.

At Sattara the fall in 1861 was 53·60 inches, being the greatest fall recorded since 1853 when 56·88 inches fell. In 1862 the fall was only 34·41 inches, but the rain fell more seasonably than in any of the Northern Collectories.

The Civil Surgeon at Sattara makes some very interesting remarks on the subject of the rain fall. In 1861 the fall exceeded the average fall by 10·43 inches. In 1862 the fall was 8·76 inches less than the average fall. Dr. Cook however adds that these differences are not so great as those of the seasons of 1853 when the fall was 56·88, and 1855 when it was as low as 33·03 inches. The intervening

year of 1854 was however an average year, the fall having been 43·31 and this undoubtedly diminishes the apparent climatic disturbance for that period.

### BELGAUM.

In 1861 the fall at Belgaum was 53·76 inches. This very greatly exceeded the fall in 1859 and 1860, which show respectively 31·51 and 27·39 only. In 1862 the fall was 47·02. This is also greatly in excess of the fall in 1859 and 1860. The difference between 1861 and 1862 was not great as regards the total fall for each year, but the periods during which the greater part of the rain fell vary in the same way as in the Northern Collectories, though not to the same degree. In June, July and August of 1861 the fall was nearly  $47\frac{1}{4}$  inches, while in 1862, during the same period, it was  $30\frac{1}{4}$  inches.

### DIARWAR.

In 1861 the fall at Dharwar was 33·58 inches, which exceeded the average fall. In 1862 the fall was 35·39 which was still more in excess of the average fall. In 1861 in June, July and August the fall was  $25\frac{1}{4}$  inches. In the corresponding months of 1862 the fall was only  $14\frac{3}{4}$  inches. The seasons of 1861 and 1862 were therefore marked at Dharwar by the same phenomena as in other places. At Dharwar it should be remarked that the rain fall is steadier than at any of the other places which have been alluded to, and this increases the value of the observations at Dharwar and the deductions drawn from them.



***TABULAR STATEMENT** showing in a concise form the nature of the Monsoon in the several Collectorates.*

Names of Collectorates.	Monsoon of 1861.		Monsoon of 1862.	
	Unusually heavy rain fall or otherwise.	Seasonable or otherwise.	Unusually heavy rain fall or otherwise.	Seasonable or otherwise.
<b>KHANDESH . . . .</b>	Greatest fall since 1854.	Seasonable.	Slightly in excess of average fall of preceding eleven years.	Unseasonable.
<b>AHMEDNUGGUR .</b>	Greatest fall since 1855.	Seasonable.	Ordinary fall. . .	Unseasonable.
<b>POONA . . . . .</b>	Greatest fall since 1855.	Seasonable.	Exceeds average fall.	Unseasonable.
<b>SHOLAPOOR . . . .</b>	Less than average fall.	Seasonable.	Less than average fall.	Unseasonable.
<b>SATTARA . . . . .</b>	Greatest fall since 1853.	Seasonable.	Less than average fall.	Seasonable.
<b>BELGAUM . . . . .</b>	Greatest fall since 1859. Records furnished do not go further back.	Seasonable	Greatest fall since 1859. Records furnished do not go further back.	Unseasonable.
<b>DHARWAR . . . .</b>	Greatest fall since 1857, and exceeds average fall.	Seasonable.	Greatest fall since 1856 and greatly in excess of average fall.	Unseasonable

J. G. FIFE, Captain, R. E.,  
Superintending Engineer for Irrigation.

## PUBLIC WORKS DEPARTMENT.

Letter No. 209 of 1863.	To the CIVIL SURGEON, Dharwar.
Do. „ 210 of „	To the CIVIL SURGEON, Belgaum.
Do. „ 211 of „	To the CIVIL SURGEON, Dhoolia.
Do. „ 212 of „	To the CIVIL SURGEON, Sattara.
Do. „ 213 of „	To the CIVIL SURGEON, Sholapoor.
Do. „ 214 of „	To the CIVIL SURGEON, Ahmednuggur.
Do. „ 215 of „	To the CIVIL SURGEON, Poona.

Sir,—I have the honour to request you will favour me with the rain fall as gauged under your supervision, from 1st January 1861 to 31st December 1862, separate for each month.

2. The late Colonel Baird Smith in his Famine Report has recorded the fact that previous to famines there is nearly always more or less climatic disturbance, and as far as my limited knowledge of the subject goes, it appears to me that such climatic disturbance has been experienced on this side of India during the past two years, and that it is not unlikely that this may terminate in a famine during the present year.

3. As far as I can ascertain from the registers it appears that the rain fall of 1861 was unusually heavy, considerably exceeding the average fall of preceding years almost wherever observations were taken and in some places exceeding the heaviest fall recorded during the preceding ten years.

4. The succeeding year of 1862 was marked by absence or extraordinary scarcity of rain at the usual season and a famine was believed to be at hand. After the usual monsoon period had passed, however, very abundant rain fell, and in several places the total fall during the year was thus brought up to beyond the average fall.

5. Whether this evident climatic disturbance will terminate in a drought and famine remains to be seen, but the subject is of such great importance generally and to my department in particular, that I am sure I need make no apology for asking you for information and for any observations that may occur to you to elucidate the question.

6. The part of the late Colonel Baird Smith's report I have alluded to will be found in the *Bombay Times' Calendar* for 1862, commencing at page 337 and paragraph 28.

I have, &c.,

(Signed) J. G. FIFE, Captain,  
Superintending Engineer for Irrigation.

*Office of the Superintending Engineer for Irrigation,  
Kirkee, 29th April 1863.*

(True Copy),

J. G. FIFE, Captain,  
Superintending Engineer for Irrigation.

No. 25 of 1863.

From Assistant Surgeon C. K. COLSTON,  
Acting Civil Surgeon, Dhoolia.

To Captain FIFE, Royal Engineers,  
Superintending Irrigation Engineer, Kirkee.

SIR,—In accordance with the request contained in your letter No. 211 of 1862, I have the honour to forward herewith the Dhoolia Rain Gauge Register for 1861-1862: but I am sorry that my short acquaintance with the meteorology or climate of Khandesh does not enable me to offer any prediction regarding the forthcoming season (rainy).

I have the honour to be,

Sir,

Your most obedient servant,

C. K. COLSTON,

Acting Civil Surgeon.

*Dhoolia, 6th May 1863.*

*MEMORANDUM of Rain fall from 1st January 1861 to 31st  
December 1862.*

Months.	In 1861.		In 1862.		Remarks.
	Inches.	Cents.	Inches.	Cents.	
January .....	..	43	..	..	
February .....	..	..	..	..	
March .....	..	..	..	..	
April .....	..	7	..	67	
May .....	..	42	..	..	
June .....	10	55	1	56	
July .....	3	24	1	78	
August .....	5	73	1	10	
September .....	2	16	9	23	
October .....	..	55	2	62	
November .....	..	..	2	15	
December .....	..	..	..	..	
Total....	23	15	19	11	

*Dhoolia, 6th May 1863.*

C. K. COLSTON,  
Acting Civil Surgeon.

No. 33 of 1863.

From T. E. P. MARTIN, Esq.,

Acting Civil Surgeon, Ahmednuggur,

To the SUPERINTENDING ENGINEER for IRRIGATION, Kırkec.

SIR,—I have the honour to acknowledge the receipt of your letter No. 214 of 1863, and in compliance with your request beg to forward the rain fall for 1861-62 as registered at the Civil Hospital Ahmednuggur. The subject of your letter is so interesting and it would be of such vast importance if it were possible to determine the approach of a famine season by the observation of climatic changes, that I very much regret my want of experience prevents my adding anything to the meteorological facts you have recorded. In Sind,

where I was stationed during the two years 1861 and 1862, exactly the same unusual rain fall characterised the two monsoon seasons.

In the event of any thing occurring to me likely to help your investigation, I shall be most happy to forward it to you, but for the present can only hope that in a matter in which there must necessarily be great difficulty in collecting trustworthy data, the actual experience of the approaching season may happily disappoint your prediction.

I have the honour to be, &c.

T. E. P. MARTIN,

Acting Civil Surgeon,

*Ahmednuggur, 2nd May 1863.*

Ahmednuggur.

*RETURN of Rain fall at the Civil Hospital AHMEDNUGGUR, during the last two years commencing from the 1st January 1861 to the 31st December 1862.*

Months.	Years.			
	1861.		1862.	
	Inches.	Cents.	Inches.	Cents.
January .....	..	83	..	06
February .....	..	..	..	..
March .....	..	07	..	..
April .....	..	..	..	76
May .....	3	61	..	..
June .....	8	48	5	34
July .....	4	45	..	06
August .....	8	01	2	61
September .....	7	67	8	94
October .....	3	64	8	43
November .....	..	..	..	82
December .....	..	..	..	..
Total.....	36	76	27	2

T. E. P. MARTIN,

Acting Civil Surgeon.

*Ahmednuggur Civil Hospital,  
2nd May 1863.*

*Civil Hospital POONA Rain Report.*

Months.	Total fall of Rain for			
	1861.		1862.	
	Inches.	Cents.	Inches.	Cents.
January .....	..	..	..	..
February.....	..	..	..	..
March.....	..	60	..	..
April .....	..	30	..	40
May .....	..	57	..	..
June .....	6	13	4	60
July.....	16	57	1	39
August .....	8	22	2	44
September .....	7	61	9	18
October .....	6	56	8	89
November .....	..	..	..	28
December .....	..	..	..	..
Total....	46	56	27	18

G. G. W. MAITLAND,  
Civil Surgeon.

*Poona, 20th May 1863.*

REGISTER of Rain fall in the Town of SHOLAPOOR, during each month, from the year 1853 to 1862 inclusive.

MONTHS.	1853.		1854.		1855.		1856.		1857.		1858.		1859.		1860.		1861.		1862.	
	Inch.	Cents.	Inch.	Cents.	Inch.	Cents.	Inch.	Cents.	Inch.	Cents.	Inch.	Cents.	Inch.	Cents.	Inch.	Cents.	Inch.	Cents.	Inch.	Cents.
January .....	..	09	..	..	..	33	..	..	06	..	..	11	..	..	..	..	88	..	13	..
February .....	..	60	..	..	..	47	..	..	06	..	..	03	..	..	..	..	..	..	..	..
March .....	1	17	..	..	..	10	..	..	37	..	..	17	7	05	..	..	10	..	..	..
April .....	..	36	1	12	..	02	5	55	31	1	1	67	1	58	..	..	48	..	83	..
May .....	..	43	2	60	3	86	4	52	78	1	5	21	1	07	..	..	25	..	04	..
June .....	3	..	7	56	..	..	1	41	86	3	4	61	3	72	13	29	8	48	2	52
July .....	..	..	3	81	..	55	7	96	3	86	4	61	3	86	6	79	3	36	..	58
August .....	11	23	3	..	..	38	..	..	14	1	1	53	8	37	..	95	6	79	3	55
September .....	4	87	8	25	2	14	..	89	10	9	9	92	6	56	8	12	3	18	12	50
October .....	..	20	6	46	5	80	2	21	3	01	6	79	4	12	3	13	1	95	2	70
November .....	3	80	..	58	..	..	..	07	4	66	2	46	..	..	..	..	..	..	..	89
December .....	..	..	1	20	..	..	..	04	..	..	..	..	..	..	..	..	..	..	..	..
Total..	30	56	31	58	13	65	23	77	34	14	33	50	33	33	33	7	26	47	23	74

F. W. HARRIS,  
Officiating Civil Surgeon.

Sholapoor, 4th May 1863.

No. 35 OF 1863.

From the CIVIL SURGEON, Sattara,  
To the SUPERINTENDING ENGINEER for IRRIGATION.

Sir,—In accordance with the request contained in your letter No. 212, dated 29th April 1863, I have the honour to forward a return of the Rain fall registered in Sattara for the years 1861 and 1862.

2. The average Rain fall for the nine years preceding 1861, *i. e.* from 1852 to 1860 inclusive, amounted to 43 inches 17 cents. The return for the year 1851 shows so small an amount (26 inches 27 cents) that I am unwilling to include it in the average, as I imagine that it is from some cause untrustworthy.

3. Contrasting the two years under consideration with the average thus deduced, we find that the fall for 1861 exceeded the average by 10 inches 43 cents, and that for the year 1862 was less than the average by 8 inches 76 cents. The difference between the two years reached 19 inches 19 cents.

4. Irregularities equal to these have occurred in the preceding nine years without going on to produce the climax of a famine. Thus the Rain fall for the year 1853 exceeded the average by 13 inches 71 cents, and that for 1852 by 8 inches, while the fall recorded for the year 1855 fell 10 inches 14 cents below the average.

5. The two years preceding 1861 were remarkably equal and presented little or no deviation from the average. Colonel Baird Smith in the passage quoted by you would seem to point out that the climatic disturbances could be traced back for four or more years before they resulted in the dreaded climax.

6. It may be that the sum of nine years is too small a period from which to deduce a fair average, and that therefore the data I have to give may be of little or no moment.

7. It would be very far from my wish or intention to try to prove that the result you deem likely to be imminent is not in the



least foreshadowed by the climatic disturbances to which you have called attention, but on consideration of the data (meagre as they are) at my disposal, it does not appear to me that such a conclusion is altogether warranted.

8. I have the honour to attach a statement of the Rain fall for the period quoted by me, viz. from 1852 to 1860 inclusive.

I have the honour to be,

Sir,

Your most obedient Servant,

HENRY COOK, M. D.,

Civil Surgeon.

*Sattara, 5th May 1863.*

STATEMENT of the fall of Rain registered at SATTARA for the years 1861 and 1862.

Months.	For the year 1861.		For the year 1862.	
	Inches.	Cents.	Inches.	Cents.
January .....	..	06	..	33
February.....	..	..	..	..
March.....	..	..	..	..
April .....	..	62	..	10
May .....	2	95	..	01
June .....	2	13	5	45
July.....	21	..	9	86
August .....	19	86	7	57
September .....	3	91	5	99
October .....	3	77	4	46
November .....	..	..	..	64
December .....	..	..	..	..
Total....	53	60	34	41

HENRY COOK, M. D.,  
Civil Surgeon.

*STATEMENT of the fall of Rain registered at SATTARA, for nine years, from 1852 to 1860 inclusive.*

Years.		Amount of Rain.	
		Inches.	Cents.
For the year 1852	.....	51	13
„ 1853	.....	56	88
„ 1854	.....	46	31
„ 1855	.....	33	03
„ 1856	.....	35	70
„ 1857	.....	47	22
„ 1858	.....	34	08
„ 1859	.....	41	04½
„ 1860	.....	43	18
Total.		388	57½
Mean.		43	17

HENRY COOK, M. D.,  
Civil Surgeon.

## RETURN of the fall of Rain at BELGAUM

1861.

MONTHS.	Inches.	Cents.	Remarks for each month.
January . . . .	..	38	Winds S. Westerly and Easterly.
February . . . .	..	..	Easterly with occasional sea breeze in the evening.
March . . . . .	..	70	Winds S. Westerly and Easterly.
April . . . . .	..	52	South Westerly and Easterly ; mornings cool, days hot and oppressive ; thunder storms towards the end of the month.
May . . . . .	..	41	S. Westerly and occasionally Easterly ; weather hot and dry during the day ; morning cool.
June . . . . .	5	2	Weather unusually dry in the early part of the month, and fall of rain scanty.
July . . . . .	18	50	South Westerly. Wet.

during the years 1861 and 1862.

1862.			
MONTHS.	Inches.	Cents.	Remarks for each month.
January . . . .	..	5	The land winds have been almost constant and very trying. The early part of the month was rather cloudy and 5 cents. of rain were registered. There was also some thunder and lightning.
February . . . .	..	..	The weather has been variable, cloudy about the middle of the month and latterly becoming very hot. Wind generally Easterly during early morning, S. W. during the day.
March . . . . .	..	93	The Thermometer at noon has ranged from 80° to 86°; and the heat has been felt to be unusually oppressive, but the nights have been tolerably cool. There has been sea breeze for a few hours generally setting in from 2 to 3 P. M. Since about the 12th the afternoons have clouded in and we have had severe thunder storms but little rain to speak of. Towards the end of the month electrical disturbances have become very frequent and on the evening of the 28th there was an almost continuous display of sheet lightning.
April . . . . .	..	66	The Thermometer at noon has ranged from 82° to 89°. The weather has been oppressively hot and close during the day. There has been frequent lightning and thunder with very little rain, but though the mango showers have not fallen as usual, yet the sky has been clouded, and the atmosphere moist and the grass is looking green.
May . . . . .	1	50	Days generally hot, but with sea breeze setting in a little after 2 P. M.; evenings refreshing and nights cool. Thunder storms occasionally, but the rain which has fallen has been inconsiderable. The atmosphere however is moist and the country and plains have begun to look green.
June . . . . .	15	85	Occasional storms of thunder and rain from N. W. up to the evening of the 8th, when the S. W. Monsoon set in and continued steadily till the evening of the 12th, when a break commenced, which with occasional squalls lasted till the 27th, when the clouds came up again from the S. W. Altogether 15 inches and 85 cents.
July . . . . .	6	28	The first part of the month was showery; towards the middle squally with heavy showers, and latterly the temperature has been cool, almost chilly with the wind more from the N. W.

1861.

MONTHS.	Inches.	Cents.	Remarks for each month.
August . . . .	24	11	Winds S. West.
September ..	2	16	Prevailing Winds S. W. Weather generally fine.
October . . . .	1	66	A fine month. At the close Easterly winds beginning to set in.
November ..	..	30	The weather was cloudy about the middle of the month and 30 cents of rain fell in sudden showers on the 13th and 14th. We have had a fair amount of sea breeze, but the land wind has on the whole prevailed.
December ..	..	..	Mornings and evenings cold with fresh North Easterly winds ; sea breeze moderate.
Total..	53	76	

*Belgaum, 31st May 1863.*

1862.

MONTHS.	Inches.	Cents.	Remarks for each month.
August . . . .	8	61	In the beginning of the month the atmosphere was damp and cloudy, with generally some sunshine daily; towards the middle chilly with frequent rain. There has been a break with heavy dews since the 20th. Winds S. W., West and N. W.
September ..	5	50	First part of the month wind light from W. and S. W. with clouds breaking up at night in S. W. Lightning and thunder with rain on the 5th and 6th. $5\frac{1}{2}$ inches registered during the month. Break on 23rd and 24th.
October . . . .	6	44	Lightning and thunder nearly all the month. Heavy showers on the 18th, 21st and 22nd from N. E., latterly a steady East wind has set in with heavy dews.
November ..	..	35	In the commencement of the month there was a dry Easterly air without much wind, and there were heavy dews nightly. A sudden momentary shower fell at 9-30 P. M. of the 14th but not enough to register. On the 21st the wind inclined from Westward and gentle rain, 12 cents, fell during the evening and the weather was cloudy, but the last two days it has been clear.
December. . . .	..	85	There has been a prevalence of sharp cold Easterly wind perceptible through the day. The afternoons of the 24th, 25th and 26th were cloudy with lightning in the East and from 5 P. M. on the latter day several showers fell and 85 cents of rain were registered.
Total .	47	2	

C. G. Ross, Assistant Surgeon,  
Acting Civil Surgeon.

*Full of Rain at DHARWAR from the 1st January 1861 to the 31st December 1862.*

	1861.		1862.	
	Inches.	Cents.	Inches.	Cents.
January .....	..	..	..	25
February .....	..	..	..	..
March.....	..	..	..	93
April .....	..	81	1	59
May .....	2	17	1	73
June .....	3	74	6	67
July.....	9	10	3	42
August .....	12	36	4	56
September .....	3	45	4	42
October .....	1	60	10	30
November .....	..	35	1	45
December .....	..	..	..	7
Total ..	33	58	35	39

E. H. R. LANGLEY,  
Acting Civil Surgeon.

*Dharwar, 7th May 1863.*

No. 3180 of 1863.

PUBLIC WORKS DEPARTMENT.

Submitted to the Secretary Public Works Department for the information and consideration of Government.

2. In many parts of India there was unusually hot weather at the end of April and in May 1863, and unusual heat is frequently followed by a plentiful rain-fall during the South West monsoon. The reason is obvious, for as the South West monsoon is caused by

the heated air rising over the vast continent of India, and admitting the cool, vapour-laden breezes, from the Indian Ocean, so any thing which increases this action (more particularly unusually hot weather) produces a large rain-fall during the South West monsoon.

3. The South West monsoon has set in favourably, and not too early, which is a great advantage; I hope that the gloomy anticipation of Captan Fife may not be realized, but it will be better that he should sketch out one or more large works in each of the Collectories (particularly in the eastern ones where drought is more apt to cause distress), so that famine relief works may be commenced if necessary, to the advantage of Government as well as to the relief of the starving poor.

GORE MUNBEE, Colonel, R. E.,  
 Officiating Chief Engineer at the Presidency.

*Office of Chief Engineer at the Presidency.*  
*Bombay, 24th June 1863.*

RESOLUTION of Government, No. 1342, dated 11th July 1863 :—

“Government are of opinion that it would be advisable that Captain Fife should be prepared with Famine Works in case of need”

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SELECTIONS FROM THE RECORDS OF THE BOMBAY  
GOVERNMENT.

No. LXXX.—NEW SERIES.

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R E P O R T

ON THE

SANITARY STATE OF THE ISLAND OF BOMBAY,

BY

A. H. LEITH, Esq., M.D.,

DEPUTY INSPECTOR GENERAL OF HOSPITALS

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WITH MAP AND DIAGRAM.

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1864.



# REPORT

## ON THE

### SANITARY STATE OF THE ISLAND OF BOMBAY.

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THE record borne in its rocks tells that Bombay was once part of the bed of a fresh-water lake, within the reach of volcanic eruptions, and that after a succession of effusions of igneous rock, the last of which threw a thick basaltic mantle over the fossiliferous shale, there was a sub-sidence below the level of the sea of the whole area, perhaps simultaneous with the rising of the nummulitic cliffs of the east coast of Arabia. Subsequently to this depression there was a partial upheaval, accompanied probably by the rising of the effused trap, which has broken up and brecciated the shale and which is injected among its layers, both in the axis of Malabar Hill and on the east side of the Island in Colangee and Race Hills. The softer rock which had risen above the surface of the sea, and which was not defended by superincumbent hard trap or basalt, was washed away, and it has disappeared along with the craters, vents or fissures from which the igneous rock was poured out, and the probable line of which is indicated by the hot-springs still existing along the Konkan.

2. After the denudation there remained a central plain covered at high tide by the sea, having on its eastern and western sides two parallel ranges of low hills, both of which had an eastern scarp and a western slope, and which at highwater were chains of islets or isolated rocks. Beaches of calcareous sand, the exuviae of foraminifera and the comminuted shells of mollusca, were formed at various points, such as Back Bay, Wurlce, and Mahim, and at Seoree there is evident indication of the upheaval of a shelly beach by a comparatively recent convulsion of the earth.

3. Barriers to the free flow of the tidal currents were thus formed between some of the islets, but the flood-tides still found

access to the central basin at Dharavee, Wurlee, and the "Great Breach," and a creek extended southwards as far as the centre of the present Native Town, and gave origin to the name of "*Pace-dhonee*." Dr. J. Fryer, who visited Bombay between the years 1672 and 1681, in describing the Island, wrote that "in the middle between Parell, Maijin, Sciam, and Bombaim, is an hollow, wherein is received a breach running at three several places, which drowns 40,000 (query, 4,000 ?) acres of good land, yielding nothing else but samphire." And of the climate he said it is "extremely unhealthy; at first thought to be caused by bubsho (rotten fish); but though that be prohibited, yet it continues as mortal. I rather impute it to the situation, which causes an infecundity in the earth and a putridness in the air;"

\* \* \* "whence follow fluxes, dropsy, scurvy, barbers,"

\* \* "malignant and putrid fevers, which are endemial diseases."

4. Soon after the above was written embankments were made to exclude the tidal waters, and the Rev. Richard Cobbe wrote in the year 1715 that Bombay was "much healthier than heretofore, or than is usually reported, which may be attributed not only to the prohibiting the bucksho (the smaller sort of fish), with which they used to dung their ground and trees in these parts, but to the stopping up and repairing several sea breaches which formerly overflowed a third part of the Island." Between forty and fifty years later, Dr. Lind, a medical author of high repute, wrote, "The Island of Bombay has of late been rendered much more healthy than it was formerly by a wall which is now built to prevent the encroachment of the sea."

5. The chief embankment is across the "Great Breach," between Mahaluxmee and Mama Hujanee, and is called the Hornby Vallade, and since it and the smaller ones at Wurlee and Dharavee were built, the greater part of the central plain or "Flats" has been recovered for cultivation. At the end of last century the Duncan Causeway or *Vallade* was made to connect Bombay with Salsette, and the obstruction thus raised to the scour of the tide, along with that caused by the more recent Chimboor Causeway, has greatly accelerated the silting up of the channels between Bombay and Salsette and Trombay with the detritus brought down by the Oolas River and the

streams that enter the harbour at Belapoor. On the south of Bombay the two islands Colaba and Little Colaba or Old Woman's Island have been united by causeway in the time of the present generation, and the intervening channel has now become effaced. Within the last few years a causeway was constructed in place of the ferry that plied between Bombay and Little Colaba, and by filling up, partly with street-sweepings and rubbish and partly with sand, the islands have been made one.

6. The united Island stretches eleven miles, measured from Riwa Fort at its north end to the Lighthouse and Observatory at its southern extremity, where the latitude is reckoned to be  $18^{\circ} 53' 30''$  and the longitude  $41^{\circ} 51' 12$  sec. Its average breadth is two and a half miles. The Island is indented by the sea at its south end between Colaba and Malabar Hill, the shallow-water bay thus formed being three miles across, and having a depth of two miles: there is another much smaller indentation between Wurlee point and Mahim.

7. On the north Bombay was separated from Salsette by a channel varying in width from half a mile to a mile, but this is now bridged over by the Duncan and Lady Jejeebhoy causeways and by the two railways, and a salt-water basin has been formed to which the tidal waters have access only from the westward. On the north-east Trombay was separated from Bombay by an interval of from half a mile to a mile, but the channel is now nearly closed by the deposit of mud: the southern two-thirds of Bombay has on its east the harbour, which is from five to seven miles wide, while the whole of the western and southern shore faces the open sea.

8. Were it always high spring-tide one of the sources of insalubrity would be cut off, but there is a rise and fall of the sea which, from the result of sixteen years' observations with a tide-gauge, averages 11·7 feet, and which at the springs has an extreme range of 17·9 feet; and as there is a very gently shelving shore, the extent of mud, either bare or covered with *avicennia* bushes, that is exposed at low water, and of barren marsh that is flooded at new and full moon, is very great. The superficies of mud and salt marsh surrounding the Island is approximately shown in the accompanying map, which has been compiled for the purpose. The bared bed of the sea

on the north and east is muddy, and at the southern part of the harbour the mud is particularly foul, and it is offensive when the breeze has easting. On the west the shore off Mahim is sandy, but there are rocks off Wurlee covered with zoophytes, which at low spring-tides taint the breeze blowing over them with a disagreeable fishy smell.

9. Exclusive of the large marshes north of Bandora, which lie along the west side of Salsettê, there are enclosed between Bombay and Trombay, and between these and Salsette as far north as Bandoop, twenty-eight square miles of waste land that is submerged by the sea at every spring-tide. There are also five hundred acres of brackish or salt marsh still totally unreclaimed within the Hornby Vallade near the centre of the Island, while most of the land on the Flats that has been reclaimed has not yet been advanced beyond rice cultivation.

10. In connection with the bearing of the marshes the direction of the wind has to be taken into account, and of necessity the Colaba observations have to be used, as it is only at the Government Observatory that there is a wind-guage. There is reason to suppose that local circumstances modify in some measure the lighter winds that blow from Salsette, and that were there an anemometer at the northern end of Bombay, its indications would be somewhat different from those of the one which is now placed eleven miles distant at the extreme south point.

11. From the hourly observations published in the Meteorological Report for the year 1850\* the following has been deduced :—

*Table showing the Number of Days on which the Wind blew from each point.*

Days.		Days.		Days.		Days.	
North.... 16	41	East .... 6	18	South .... 6	34	West .... 18	75
N by E .. 8		E by S .. 3		S by W .. 5		W by N .. 11	
NNE .... 11		ESE .... 5		SSW .... 10		WNW .... 31	
NE by N.. 6		SE by E.. 4		SW by S.. 7		NW by W.. 15	
NE..... 8		SE..... 5		SW .... 23		NW .... 27	
NE by E.. 5	30	SE by S.. 4	20	SW by W. 12	04	NW by N.. 18	83
ENE .... 11		SSE .... 8		WSW.... 22		NNW .... 39	
E by N .. 6		S by E .. 3		W by S .. 8		N by W .. 11	

\* The observations of former years are used in preference to those of more recent date, as the efficiency of the Osler's wind-guage at the Observatory cannot now be depended on owing to its sensitiveness having become impaired, and also owing to the apparatus for the time-ball having been erected so as to interfere with the free access of the wind to the vane of the guage.

12. From the mean of the reports of two years (1848 and 1850) the number of hours during which the wind blew from north and east, and between these points, in different months was in

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
301·5	204·0	159·5	88·5	22·5	7·5	18·0	12·0	55·0	177·5	384·0	364·5

13. The yearly mean pressure of the wind was 0·26 pounds on a square foot, which is equivalent to a velocity of eight miles an hour.

14. It is thus seen that during an aggregate of about one-fifth of the year the breeze blows over the marshes in its passage to Bombay.

15. No part of Bombay is exempt from fevers of the intermittent and remittent types, or such as are generally thought to be attributable to a cause of which the influence of marshy ground is an important element; but the Mortuary Returns show that these fevers have different degrees of intensity in different localities. In making use of these returns it is requisite to mention that most of the causes of death are reported by persons who have no medical knowledge, and that from the ignorance of the reporters there are included under the term "fever" many deaths which are due to other diseases, and of which the fever was merely a concomitant. Although the reported mortality from this cause is greatly in excess of the reality, yet the *ratios* of fever deaths may fairly be taken as approximately correct, because it is reasonable to conclude that the same error pervades equally the reports from all localities.

16. When the monthly ratios of the whole Island for the last fifteen years are linearly projected according to scale, it is found that there are two principal waves which reach their greatest heights respectively about May and December. When again the ratios of the different registration divisions are projected separately, it is seen that they contribute very unequally to raise the two maxima, the rural divisions entering most largely into the wave which culminates about December, and the urban divisions into the wave which attains



its greatest height about May. It is seen also that the contribution of each division to the formation of the wave that corresponds with the decline of the year is in direct proportion to its degree of vicinity to the marshes. And were a minuter examination made by projecting in the same way the fever ratios of the sections of which the divisions are composed, it would still be found that in proportion to the degree in which they are exposed to the air wafted over the marshes, so is the height to which the mortality attains in December. It is probable that the urban sections contribute to the fever wave of the hot months in proportions to the density of their population. The outlying D division is aberrant.

17. At Coorla, which is situated in the marshy district at the south end of Salsette, there is a Medical Dispensary which has been always under the charge of educated men—Graduates of the Grant Medical College, and as there is no room to suspect any errors in their diagnosis of fever, the returns of the Coorla Dispensary for the last seven years are now made use of as a test of the general correctness of the deduction that has been drawn from the Mortuary Returns as to the baneful influence of the marshy wastes on the health of Bombay.

18. The ratio of admissions for fever to those from all causes, excepting cholera, small-pox, and measles, when laid down by scale according to months, shows but one wave for the year, and it attains its greatest height in November. The hot-weather wave which is produced in the urban sections of Bombay is here wanting, as it is also in the northern sections of Bombay. The Coorla returns show the admissions only, and therefore indicate the beginning of the febrile attacks, whereas the Mortuary Returns indicate the fatal termination which has taken place after a certain lapse of time, and it is therefore to be expected that the former should attain to the maximum at an earlier date than the latter. The Coorla rise and fall in the number of admissions agrees remarkably with the increase and decrease in the number of days in the month during which the wind blows from and between the north and east points of the compass.

19. The area of the Island is about twenty or twenty-one square miles, and the aspect of its surface is rapidly changing, owing to

reclamations from the sea being in progress and to hills being levelled by quarryings. Much that a few years ago was waste ground or fields is now occupied by dwellings, and the suburban localities have become urban. Still of the low, level land recovered from the sea in the middle and on the east side of the Island nearly a fourth part of the area, or about three thousand acres, is classed as *salt batty* ground, and being used only for rice cultivation it is flooded during the rains, and is left to spontaneous desiccation after the crop is reaped. It is estimated that eleven hundred acres of better ground are cultivated by gardeners and others. About nine hundred and eighty acres of the marshy eastern shore are utilized as salt-pans, and there are about two thousand acres of land occupied by plantations of cocoanut, brab, and date-palms. The area now built over cannot be easily ascertained as there are numerous isolated houses, and many clusters of huts near quarries, mills, and other works, that have been erected by the labourers, without control as to site or regularity of construction having been exercised, or any arrangements for the maintenance of cleanliness having been made. Some of these hamlets if allowed to remain are likely to grow into unsightly and unwholesome villages, and even now their inhabitants by resorting to the fields and gardens so pollute the atmosphere, while the offensive smell from the many stills of the Blundarees is also so widely diffused, that there is no longer as formerly any relief found in the country when fleeing from the sickening odours of the town; and to those whose sense of smell is not yet blunted, the impurity of the air is depressing and life is a weariness. Even in the suburban districts, which are chiefly occupied by houses of the gentry, both European and Native, a pure atmosphere is not met with, because, although under their own roofs the domestic arrangements of the masters are good, yet it is but seldom that any provision is made by them for the necessities of their numerous servants, who therefore cannot but transgress either on their own or their neighbours' grounds.

20. For registration purposes there is a partition of the Island into six divisions, designated according to the first six letters of the alphabet; the shipping in the harbour is comprised in the additional Water Division. Each of the land divisions is subdivided into sections, which are both numbered and named. The Fort is one

The amount of aqueous vapour diffused in the air is of much importance from its being the vehicle by which many noxious matters may be diffused. The Mortuary Returns show, as has before been stated, a rise in the ratio of fever deaths in the hot months, and this rise is due to the urban sections of the Island, and to them, it is thought, in proportion to their density. This yearly exacerbation of the endemic fever may reasonably be attributed to *ochletic* causes. It will be seen that both the temperature and the quantity of vapour in the air increase rapidly from February until May. The *ochletic* fever-wave likewise increases gradually in height during the same time, and with the declining temperature it falls in June; but the decrease of the ratio of fever deaths appears to be greatly accelerated by the heavy fall of rain that then washes away much of the accumulated filth.

25. The houses, with the exception of public buildings, and a few of the dwellings that have been lately erected, consist of wooden frame-work, generally filled in with brick and mortar or rubble masonry, but in some ranges in the poorer streets, or in the suburban localities, the walls are wholly of wood. The insecurity of these structures has been shown in the many accidents that have resulted from falling houses in the ten years ending with 1862. Besides many being maimed, there were sixty-nine killed in that time. Of these fatal casualties there were twenty-six in the first and forty-three in the last five of those years.

26. The roofs are sloping and tiled, and the law requires that all houses built in streets shall have eaves-gutters and spouts to convey the rain-water; but this is seldom acted on. Two feet is the minimum height of the plinth as fixed by the Municipal Commissioners, and it is often higher. Some of the older houses are built with corners projecting a little into the road, which has thus a zigzag outline; but now the law requires that all shall be in line, and this is generally enforced. Projecting doors are prohibited, and weather-boards and eaves exceeding three feet are forbidden in streets not twenty-five feet wide; but in streets of this width permission may be given by the Commissioners for the erection of balconies five feet broad on each side of the street, thus leaving but a breadth of fifteen feet that is not shaded from the sky, and there being no

restriction as to the height of the houses, and as the value of fresh air and light has not been appreciated, there are in the wealthy parts of the Native Town, and still more frequently in the Fort, narrow lanes which scarcely admit the rays of the sun. As an instance it may be mentioned that in a lane in the Fort where the roadway is but eleven feet wide and the houses on each side are from forty to fifty feet high, on one side the house has on its first floor a projecting balcony, and with this advanced frontage the upper floors are built, and over the highest of these the broad eaves of the roof extend, while the house on the other side of the lane has projecting weather-boards and eaves, so that between the houses there cannot be more than two or three feet of interval through which the sky is visible directly over-head. These houses were built before the publication of Act XIV., and the evil cannot be removed; but in Market section in Khuturwarce Lane, which is a narrow winding alley, a large house of four floors, and about forty-five feet high, has just been built three feet in advance of the line of its neighbour, leaving the road but sixteen and a half feet wide. Such encroachments might be prevented.

27. In the denser parts of the town the houses are so close to one another that few have any back-yard. They sometimes, however, have a little court in which is a well; but there are very seldom any out-houses. In the larger houses the floor of every story is plastered or laid with tiles, and if each story is inhabited by a separate family, as often is the case, it has a bathing-place at one end, with its pipe for waste water. Another place is set apart for cooking, a hearth being prepared on the floor, and as there never is any chimney nor outlet for the smoke or vapour excepting the window or doorway, the inhabitants and their neighbours have to breathe the impure air rendered pungent with wood smoke; or in the poorer houses the fuel may be what is called *bois d'herbe* in the Channel Islands—the Indian *oplee* or cake of cowdung, or, what is by far more offensive, the *oplee* of horsedung, the smoke of which can scarce boast of any appreciable quantity of the redeeming item creasote or carbolic acid that results from the combustion of wood, and which may, it is hoped, prove a substitute for the unused lime-wash in rendering innocuous the organic products of respiration that are condensed on the blackened

walls of the crowded, unventilated dwellings. Excepting in the houses of the wealthy who have adopted European ways the windows are unglazed, and are provided with only wooden shutters for privacy or for defence against inclement weather, so that when shut there are both darkness and stagnation of air in the rooms.

28. Almost every house in the dense part of the town has a privy on the ground-floor, and some houses that are inhabited by several families have one for each floor, and in this case they are all built in one tower-like erection at the end or back of the house, and the sweeper has access by the *gallee* to its common reservoir at the basement. It is sometimes the case that there is a block of several houses all belonging to the same owner, and by him let to many families, and that the privy accommodation is scanty. Some such houses were visited, and the abominable filthiness of the premises and the foulness of the air were almost beyond description. Among others such there was one in Mango Senoy Street in the Fort belonging to a Maharaj. It was a block of several houses of four and of five floors : in one of these, in which one had to grope in the dark, there was a central square shaft in which the light from the sky above was obscured by the dirty iron-gratings that formed at the different floors the landing-places on which the rooms opened. Under this shaft and on the basement floor there was a shallow masonry tank, intended probably for bathing, but now full of decaying leaves, such as are used in place of dishes, and of other vegetable refuse and filth, and in it and all around it there was ordure. The air in this, which ought to have been a ventilating shaft, was oppressive to respire. From this part of the building, and through a dark, noisome passage, one of the tenants led the way to a range of latrines, where he indignantly showed to what he and others were subjected by the landlord. Both men and women, to avoid wading through the pool of ordure, had to use as stepping-stones some pieces of masonry that still projected a little above its surface.

29. In most streets there are between the houses passages from two to four feet wide into which the waste water is discharged by spouts, and that give the sweepers access to the small square openings by which the soil is removed from below the privy-seats. These *gullees* used to be hiding-places for thieves before they were provided

with doors, and as most of them were unpaved, the liquid impurities soaked into the ground, and the putrid mud was seldom cleared away except by the yearly rains. Through the influence of the present Acting Commissioner of Police most of the gullees were paved. Each paved gully is now an open, broad, and flat gutter, with more or less fall towards the street, where it discharges into the side-drain or the sewer, generally by pipe, but sometimes the fluid simply trickles or falls over the edge of the plinth into the uncovered drain at the side of the street, or it flows over the road. Even were the scavenging unexceptionable, and were the law observed as to what shall or shall not be allowed to pass into the drains, such an arrangement for the conveyance of foul water from the houses would be very faulty ; but when, as now is the case, not only waste water but often night-soil is seen to pass from the house spouts, and when baskets which cannot retain liquid are used under the privy-seats, and those privies have a flat floor, and when, as is often the case, not even a basket is used, and a sweeper never visits the place, but the accumulated soil is left to flow out on the pavement of the gully—when such is the case, the present arrangement is most objectionable. When the pipe which is intended to convey the fluid down the side of the plinth to the drain is choked, as it was often found to be, the foul water is kept impounded in the gully until it overflows and spreads over the roadway, as was seen in Memon Waree and Khuturwaree Lane, Market section, and in King Lane, Fort, and elsewhere ; and in Second Guneshwaree Lane a gully behind a range of privies was found flooded with night-soil which the choking of the drain had hindered from flowing into the street-sewer as it had been used to do. It is the practice, in contravention of the law, for some sweepers to clean the privies by passing the soil into the street-drains instead of carrying it away. There are not a few instances in which the openings under the privy-seats are on the road ; such are seen in Bellasis Road, Chinch Bunder Second Lane, and in Bengalpoora. There are houses in Caval and in Mazagaon where no sweeper is called in, there being an unbuilt absorbent cesspit under the privy.

30. A large portion of the inhabitants in Oomburkharee, Mand-wee, Esplanade, and the Fort sections having no convenience resort to

the shore of the harbour ; others who are likewise unprovided at their houses use the public latrines at Boree Bunder, Modee Bay, Sonapoor, Kamatheepoora, and Kharatulao ; but the provision in this point is so generally scanty in the poorer houses, and there are so many who are houseless, that the present public latrines are insufficient in number. It is the custom of some, and chiefly in one section of the community, to send their children every morning, or at any time, to the public street instead of to their privy, and the same people throw out their night-soil from the higher windows to the public road. Nanabhoy Bomanjee Cross Lane in the Fort, and Dhunjee Dongria Street in Market section of the Native Town, are two of the places where these abominations are practised. Adults also at night defile the less-frequented streets and lanes, and any morning they may be seen trespassing on the Esplanade, and they have been seen there to outrage public decency even at midday, no one preventing them. In Kamatheepoora there is a large expensively-built public latrine ; yet in its very neighbourhood the fields and open spaces were too foul for one to walk across, the only excuse for the offenders being that the latrine at the time of inspection was too revoltingly foul to be used even by such people.

31. In the suburban localities where the poorer inhabitants live in sheds and huts detached privies are frequently provided, but little care is taken to keep them clean. Many instances of this were met with in Tarwaree, Funuswaree, and other places, where pools of excrement had collected behind or even around the privies. In Antoba Gossavi's hortos or waree behind the necessaries the ordure and washings formed pools from which a channel cut in the earth led part of the foul fluid to a cesspit, while the whole yard was intersected with gutters and pools, to which the rest of the foul liquid was being led in order to irrigate the cocoanut trees—a most objectionable mode of utilizing it. The following is an example of the favouring circumstances under which epidemic cholera lately visited some parts of Bombay. In the examination of Khetwady it was noted of the few houses in Sixth Cross Road, that in Dadabhoy Mulharee's Chal there was the cesspit of a privy overflowing into the open side-gutter of the road. In this dwelling there were eight deaths from cholera. In Eknath's Chal next door, in a narrow unpaved court, which was

wet with the waste water of a well round which the people were bathing, there was a cesspit full of filth ; in the same enclosure there was a row of necessities behind which there was an unbuilt trench full of fluid excreta and foul water, the overflowings of which passed along the base of the wall surrounding the mouth of a well that was but four feet from the privy. This well supplied its owner's household with drinking water. In this Chal there were ten cholera deaths. Opposite Eknath's Chal there was by the side of the street an exposed privy, behind which also there was a trench full of ordure, and adjoining this property and opposite Dadabhoy Mulharee's Chal (first mentioned) there was a long, low, tiled shed divided into fourteen compartments, seven on each side, with a middle common passage. Thirteen of the rooms were inhabited by as many families, while the remaining one was occupied by a dung-heap. The end towards the street had a doorway, and for each of the two rooms next to it a small window, and the two rooms at the further end had each a small aperture for a window. The other ten rooms had no outward openings, as the neighbouring proprietors on each side had built them up, and the only light or ventilation the occupants had was what was obtained through the crevices of the roof-tiles. In this building there were several deaths from cholera. In Angria's waree, opposite the end of the same street, the enclosure was dirty and wet, with the waste water of the well collecting in pools. There was a range of apartments that had their floors on the same level as the surrounding ground, and running along their back wall there was a drain that was the receptacle of all kinds of filth ; and in another part of the yard there was a row of privies behind which there was a large open trench full of excreta. In this waree there were eighteen deaths from cholera.

32. There is scarcely a part of the Fort or Native Town in which the ground along every dead wall is not wet or in pools from its being resorted to as an urinary, and not by passers-by only, but by the people of the neighbourhood, who come out from their shops and houses for this purpose, regardless of decency, and this custom is unchecked. It is true that there are numerous boards hung up in all parts of the town bearing threats of penalties to offenders, but as if in contempt of these mere declarations of what



the law is, nuisances of the most odious kind are daily or nightly committed under them. It is said that the former public urinaries were removed because the police could not prevent their being used for viler purposes.

33. The principal thoroughfares in the town are tolerably well watered when the carriages of the upper classes have to pass along them; but the roads dry so fast that during the greater part of the day the shopkeepers and the people dwelling in the town have to bear much hurtful inconvenience from the dust. These chief thoroughfares are well swept and are kept clean; but in the more obscure streets the clearing away of the daily accumulation of filth from the roads was found to be less sedulously done, and as in no place were there any dust-boxes, and as it was the custom of the people to throw out all the refuse vegetables and sweepings of their houses, not in heaps, but scattering them about, the condition of such roads was filthy up to a late hour of the day. The side-gutters are, from their want of fall, ill adapted to pass on what they receive, and there were few streets in which there was not seen, in those that were open, black stagnant mud. Some of these gutters are lined with half-dressed stone, and have flat bottoms; others have only the curb stone on one side and the wall of the house along which they pass on the other, and no masonry bottom, so that much of what enters them is absorbed by the ground. These are not merely the remains of former days; both kinds were now seen being constructed in Khetwady and elsewhere.

34. The making or metalling of roads has not kept pace with the increase of the town as was seen in Kamatheepoora, much of which had only muddy lanes, and therefore had not even the open side-gutter which usually accompanies a metalled road. In many other parts of the town also there were seen unmade streets or lanes and others which although once made were out of repair. In part of Kamatheepoora the drainage consisted of open ditches and side-gutters cut in the earth without any masonry, and these were more or less full of fetid mud. It was seen that the necessary of a populous tenement emptied itself by a surreptitiously made drain into one of these gutters at the side of Dhunjee Sootlajee Street. Such gutters would not bear much raking or sweeping, and evidently they had not for some time got it. In some places in the town, even in very densely

peopled parts, where scavengers had been at work in cleaning gutters and gullees, the filth had been left by them on the road to evaporate to a more convenient consistence before being carted away. Such was the case in Phophulwaree, Bhooleshwur, and Cawasjee Soobadar Lane, Fort, and elsewhere.

35. The way in which the night-soil and the street-sweepings have been disposed of has for many years been the occasion of complaint. The want of a proper system of drainage rendered it necessary to exclude so far as possible the former from the drains, and for a short time it was put into pits in the Flats; afterwards for some years it was deposited on the western or windward shore, where the nuisance caused by it was very great; now it is delivered into the tidal current of the harbour at Chinch Bunder by a conduit that discharges below lowwater-mark. At that bunder there are tanks for the reception of what is brought by the sweepers in their baskets, and what is collected at Sonapoor, Kamatheepoora, Kharatulao, and Parell in the carts which are stationed at these places for its reception. There are for the whole Island but forty-one of those carts, and some of them are leaky. The street-sweepings have been used in filling up hollows, in preparing ground for building and other purposes. A great part of the reclamation beside the Cooperage and between that place and the Apollo Pier was thus effected, and other land on the harbour side of Colaba has been formed in the same way, and on the west side of Grant Road five acres, from six to eight feet deep, have, in opposition to strong remonstrance, been filled in expressly with a view to being built over, and now buildings are being raised on it. Many private individuals have had the ground on which to build their houses raised with this foul material; and the water of a tank near Grant Road was spoilt last rains by the sweepings that immediately before that season had been laid down to raise the adjoining premises of a newly-built house. Preparations it is said are being made for conveying the sweepings by railway to the marsh between Coorla and Chimboor, but up to the present time they are being used in the reclamation of ground on the border of the Mandwee section of the town.

36. The surface of Bombay generally is not favourable to drainage: there are the two ranges of low hills that were naturally more

or less isolated, the eastern having its highest points at Nowrojee and Raee Hills, the former about ninety the latter ninety-five feet high, and the western running from Malabar Point to Wurlee, its extreme height being 123 feet. A narrow band along the scarp of the eastern range has its natural drainage into the harbour, and the fall of the narrow belt along the western slope of the other range is into the open sea, while the flow of nearly all the rest of the surface is to the central flats reclaimed from the sea, and which are still considerably below highwater-mark.

37. At Pydhonee, in the centre of the Native Town, and along the Bindee Bazaar the road is but one foot above the highest tide, while Grant and Bellasis Roads in some parts do not exceed highwater-mark, and the Tardeo Road is below it. These latter roads are embankments over ground that has its surface at some places six and even eight feet lower. It is very necessary with a view to drainage that a certain elevation of plinth should be required in all houses built in the lower part of the town. Two feet is the minimum height which is fixed by the Municipal Commissioners; but as may be seen in the new ground being occupied, the height of the basement is not always reckoned from the level of the road, but often from that of the ground in which the foundation is built, and it will be difficult to bring some of the houses so built into the new system of drainage.

38. Owing to their low level the Flats are flooded during the south-west monsoon, and it is not until two or three months after the rains that all the accumulated water has run off. Even this tardy draining of the monsoon water has lately been impeded by obstructions caused in making the embankments of the railways, and by the filling in of plots for building purposes, without an outlet for the water having been provided. In the artificial drainage of the town the course of the natural flow has been unhappily followed. The Fort and the part of Mandwee and Oomburkharee sections that are on the east scarp of the rocky ridge and Mazagaon village have their drainage into the harbour, and Sonapoor in the Dhobee Tulao section and standing on the beach has its few drains running into Back Bay; while from the northern end of the Esplanade all the rest of the drains are led over the Flats to the sluice at Love Grove, the distance from the

beginning of the Main Town Drain at the south end of Syud Abdool Ruhmun Street to the sluice being about three or three and a quarter miles. The fall in this distance is 17·3 feet, but it is obtained by having the sole of the sluice 14·6 feet below highwater, and it is not equally distributed, as the last mile and a half has a fall of only one foot. It is only during the last three hours of the ebb that there is any outward flow ; at other times the contents of the drain are stagnant, unless there be back-water, owing to the men in charge leaving the sluice unclosed during the rising tide that they may catch the fish that enter. The outfall of this drain is on the windward shore of the Island, and at a place where the irregular rocks prevent a free sweep of the tide from at once carrying away the sewage. A better system of drainage is sanctioned and is about to be carried out. The new scheme embraces the Fort and the Native Town as far north as the Racecourse in the Kamatheepoora section, and it is to be effected partly by gravitating sewers and partly by low level sewers emptied by machinery ; but all are to discharge into the tide-way of the harbour, where there is an average current of two miles an hour. In this scheme house drainage is provided for ; but a serious difficulty is opposed to the efficiency of house drainage in Bombay while there is so scanty a supply of water as there is at present. Another difficulty will probably be found connected with the rainfall, which, although in the aggregate heavy, is not distributed over all the year, but, as will be seen below, is nearly confined to the south-west monsoon, leaving five successive months without rain, or with too little to be of any appreciable use in flushing or cleansing the sewers.

*Mean Monthly Rainfall at the Colaba Observatory during the sixteen years from 1847 to 1862.*

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.
0·03	0·00	0·00	0·07	0·82	22·96	23·78	10·88	10·04	2·03	0·55	0·07

This gives a mean yearly fall at the Observatory of 71·20 inches quantity that is most probably below the fall for the whole

Island, as the south-west monsoon rainfall at Byculla and in the Fort, so far as recorded, is considerably greater than that at Colaba.

39. The present street-sewers, which in the aggregate are nearly twenty-five miles in length, are generally badly constructed, having flat invert, and being covered with roughly-hewn slabs through the interstices of which earth is liable to fall. They have at intervals perforated stones to receive the monsoon waters, but which give entrance besides to road grit and filth, and as they had not been regularly cleaned out, at least of late, many were found to be choked and did not pass on the sewage they received, and some were from repletion refusing to admit more, so that filthy pools were forming on the road, as was seen in Second Coombarwaree Street in Musjid Lane, Fort, and in Humalwaree, Lower Colaba. The short drains that have their outfall on the harbour shore discharge their liquid contents freely; but it is to add filth to the foul foreshore, as they have their openings at the highwater line instead of beyond low-water-mark. The street-drains in the other parts of the town that are the tributaries of the Town Main Drain could, at the time of inspection, be little else than sinks and cesspits from which the more fluid portion of their contents percolated into the surrounding soil, as the open part of the Main Drain below Bellasis Bridge was seen to be filled with black semi-consistent mud, over the surface of which grass was growing; but little fluid passed on to the nominal outlet at Love Grove. The state of the drain in its covered part between Synd Abdool Ruhmun Street and Falkland Road is unknown; as far as is learnt it has not been examined since it was rebuilt. When the air was still, as it often was in the early morning, the smell of the mephitic gas rising through the perforated slabs over the drains in the narrow streets was sickening. In the streets where, instead of having *gullees* between them, the houses are built contiguously, many of the spouts from the bathing-places communicated directly with the sewers, and thus unwittingly by the owners were made ventilating-shafts, through which the houses must be most hurtfully pervaded with the poisonous sewer gases. In a few instances the builders had adopted a better and safer plan, by which, instead of making the spout continuous, a break in it was formed, and the upper part of the pipe discharged the water into an

open funnel-like expansion of the top of the lower part, generally at a sufficient height to avoid its being an inconvenience to those frequenting the road.

40. The average fall of rain is great, but the ground is not well fitted for the natural storage of any large supply of fresh water, as this quickly runs off from the hard surface of the rocky heights, while most of the low ground is so impregnated with saline matter as to render water drawn from its wells unfit for drinking. Good water is procurable in the slopes and along the bases of the hills and in the shelly concrete of the raised beaches at Back Bay and at Mahim; but the increase of population tends to spoil it. The wells in the alluvium on which a great part of the Native Town is built are so impure from the accumulation of organic matter in the soil through which the rain that feeds them has to filter, that if they have been left but a short time undrawn it is dangerous to enter them. Since the commencement of the Mortuary Registration seven deaths from suffocation in the foul gas of these wells have been noted. Many tanks were formed from time to time by the people and by Government to catch the surface drainage, and old quarry-holes became reservoirs for water that collected in them partly by percolation and partly by its flowing in from the surface of neighbouring ground. The supply from all those sources barely kept pace with the increasing demand, and when in any year the rainfall fell short of the mean, or when the rains were late in beginning, there was much misery endured by the poor.

41. Some of the tanks are filled from the street-gutters: such is the Baboola Tank. The first heavy fall of rain is allowed to sweep away the filth that has been accumulating in the upper part of Oomburkharee without entering the tank. After this the sluice is opened, and for the following three or four months the daily rain is allowed to enter with the daily filth of the surface drained, and on that surface there is a large population of the poor whose houses are seldom visited by sweepers, and many of whom resort to the open spaces at the top of the hill and within the area of drainage. On water such as this very many had solely to depend, and even this supply in latter years used to fail, the tank being exhausted and becoming dry. Since 1859 water of a better quality has been brought within the reach of many. It is collected from an uncultivated surface,

chiefly wooded hills in the Island of Salsette, and is impounded in a valley where the village of Vehar formerly stood, at a distance of seven miles from the north end of Bombay, and it is brought by an iron 32-inch main to the centre of the Island, from whence it is distributed even to the furthest end of Colaba, the head of water being about 155 feet. This water is good, and it is well appreciated by the people, who drink no other when it is within their reach ; but there are several districts where the people have still to draw water from impure sources.

42. There are thirty-nine public dipping-wells, which are distributed as follows :—

In Division A there are. . . . .	9	In Division D there are. . . . .	4
„ „ B „ „ . . . . .	10	„ „ E „ „ . . . . .	8
„ „ C „ „ . . . . .	7	„ „ F „ „ . . . . .	1

For house supply, irrigation, and other purposes the connections are 3,528, being in—

Division A. . . . .	249	Division D. . . . .	130
„ B. . . . .	1,277	„ E. . . . .	493
„ C. . . . .	1,308	„ F. . . . .	71

43. The open deep dipping-well is objectionable from its allowing the water to be dirtied by dust and accidental causes, and by the vessels and ropes with which the water is drawn ; and the newer kind of dipping-well, of which several have been erected, is likewise objectionable, as in place of the rope the dirty hand is plunged into the water along with the vessel that has to be filled. Most of the wells are many feet deep, and have from four to six feet depth of water, so that being open they are dangerous, and are the occasion of many deaths by accident or suicide, as drowning in a well is the most common mode of self-destruction. Many of the tanks and the pools in quarry-holes are unfenced, and they also are productive of much loss of life. In the ten years from 1853 to 1862 there were 475 drowned in fresh-waters, the yearly average being forty-one in the first five years of that period, while in the second five years it had increased to fifty-four a year. These were, perhaps, nearly all preventible, and if in time to come no more precautions are taken, than

there are at present, a heavy responsibility will be on those who neglect the duty of covering and fencing the reservoirs. The dangerous and unclean dipping-well might be discontinued, and there might be substituted such fountains as would not be the occasion of any greater waste of water than is connected with the wells.

44. Since the introduction of the Vehar water the wastage of it, together with the more limited draft on the wells and tanks, has kept these fuller than they had been for many years before; the ground too is moister, and at this present time it is seen that in laying down the gas-pipes in Obelisk Road water is found in the trench at a depth of between two and three feet. The quantity of water which could be delivered daily by the present 32-inch main is only five gallons a head for three-quarters of a million inhabitants; and were there not many of the wells of questionable purity still drawn, and were all the people now dependant on Vehar water, the supply, after allowance for wastage, would be by far too little. Unless a very much larger quantity passes into the drains than does so at present, the new drainage cannot be expected to succeed, as it is reported that in London, with a distribution of thirty-one gallons a head, the aid of a rainfall distributed nearly equally over all the year is requisite to flush and cleanse the drains. At present there is much Vehar water expended in irrigation which might be better given for drinking or even for ablution. There are several tanks, some of them of large size, such as the Phansee Tulao, Jamsetjee Jejeebhoy, and the Cawasjee Framjee or Dhobee Tulao on the Esplanade; and in the Native Town besides the Baboola Tank already mentioned, there are a new tank beside Dick's Hortos, built by the late Sir Jamsetjee Jejeebhoy, and supplied by a brackish spring, and Nagpara Tank, also fed by a spring, but affording water that was formerly used for drinking and cooking; now it is uncared for, and its margins are covered with cowdung cakes that are laid there to dry. There are also Khandia Tank and another in Kamatheepoora section and Cawasjee Patel Tank, all of which are filled by surface-drainage and are foul. There are besides two, the Moombadevee and Bhooleshwur Tanks, belonging to the temples bearing these names, and to which the public have not free access.



45. The Bhooleshwur Tank is surrounded with substantial masonry, but its bottom is unpaved; it is small, and is used for bathing and for the washing of the clothes of the bathers, and from the numbers resorting to it being very great, the water, even were it renewed, and were the mud removed yearly, would necessarily be very foul. But as the tank is seldom if ever thoroughly cleaned, and leakage into it from the street-sewer adds to its impurity, it is by far too foul to be put to even its present uses. The Moombadevee Tank is large, having a surface of between ten and eleven thousand square yards; it is bordered with masonry, but its bottom is unbuilt, and being shallow its foul mud becomes in part exposed in the dry season. An attempt was lately made to clean it, but the work of doing so was not completed, and its water remains in a most foul state, having a greasy scum floating on it and accumulated at its margins. It is used for washing clothes and for bathing by those who frequent the temples that are beside it. The ground around the tank was seen to be very unclean, being resorted to as if it were a latrine.

46. There are ten public markets, but they are mostly of small size and inadequate to the wants of the community. Four of them are in the Fort, and are for the sale of beef, mutton, fish, vegetables, and bread. Three are conjoined to the slaughter-houses at Boree Bunder, Butcher Street, and Sonapoor; one is in Sheikh Mehmun Street, and two near Erskine Road in Khara Tulao section. With the exception of the beef and bread markets in the Fort and the markets at the slaughter-houses, they are not paved but only metalled, and therefore they cannot be expected to be kept so clean as they otherwise would be. There are also ten private markets of small size in various parts of the town, and all were as clean as their imperfect construction would admit of their being.

47. A census of the Island has just been taken, but the results are not yet elaborated. The population has, however, from other data been estimated to be about three-quarters of a million. It is supposed to be formed in great part of immigrants, as nearly one-half of the casualties reported in the Mortuary Returns were of persons whose birthplace was elsewhere, and the fluctuations in the population are thought to be considerable, owing to the influx

for a limited period at certain seasons of traders and labourers. The house room is not nearly adequate to the wants of the population, and many live in temporary huts of matting, or of *jowlee*, the leaves of the *tar* or brab-palm, and many are without any shelter excepting what in some cases they get in the open verandahs of the houses in the town. In the dry season this privation of shelter at night is less hurtful than it would be in a colder or a more variable climate, and it is less injurious than the over-crowding to which a great part of the people are subjected. As an instance of the over-crowding, what was seen in Second Coombarwaree Cross Lane in Mandwee section may be given : it is an unpaved lane, only nine feet wide in part of its course, with a sewer along its middle, this sewer being covered with loose, rough slabs. The road was unswept when visited, and ordure was lying on it abundantly. The houses on each side were of two or of three floors, and the various rooms were densely peopled, and the floors of the verandahs were fully occupied, while to eke out the accommodation in some of the verandahs there were *charpae* or cots slung up and screened with old matting, to form a second tier of sleeping-places for labourers that were employed in the day-time at the Railway Terminus or elsewhere.

48. A large majority of the people is of the Brahminical religion ; next in numerical order are the Moosulmans ; while in smaller numbers follow the Parsees, Jains, Native Christians, Europeans, Africans, and Jews. The Europeans are comparatively few in number and migratory, and the influence of their example has been proportionally little on the domestic arrangements of this dense population, that knows not, and is slow to believe, that there is within its reach a higher state of comfort and enjoyment than the low one it now possesses. The European inhabitants not considering India their home have hitherto borne more or less quietly with nuisances that they ought rather to have combated for the benefit of all. Now that the good result of obedience to the laws of health is becoming more and more apparent in Europe, the duty of acting according to those laws is pressing itself with increasing urgency on those here whose faith teaches them to do good as they have opportunity, and as there is now an educated portion of the native gentry, although

it is yet but small, that can appreciate the advantages of pure air, and that is willing to aid in municipal sanitary improvements, there is hope that the efforts of those in authority to improve the condition of the Island will meet with support.

49. Commerce is the occupation of nearly all those in the higher ranks of the community who do not hold office under Government. Daily labour and domestic service occupy the largest number of the people; the rest follow the trades and professions that are required to supply the numerous wants of a large population.

50. Among the trades and occupations that more particularly require notice, from their being the occasion of nuisance, are those of the butcher, tanner, distiller, and the dyer.

51. In the Mandwee section and at Boree Bunder, at the side of the Esplanade, there are two slaughter-houses, of which one, in Butcher Street, is for oxen. It is walled and paved and provided with water, and there is a drain to carry off the washings of the pavement of the court; but in the house in which the animals are slaughtered there is a square tank from which the foul fluid has to be baled out, and which cannot be kept quite clean. The inner walls of this house were crusted with blood. The other slaughter-house is for sheep and goats, and is a shed built on stakes just below highwater-mark on the foreshore of the harbour, and the blood and offal fall upon the mud, which is left exposed during the greater part of the twenty-four hours, as it is only at hightide that the water can cover it. The operations of the butcher are imperfectly screened from public view, and the offensive putrid mud around cannot but be very unwholesome. The slaughter-house for pigs at Sonapoor was in good order.

52. In Mandwee and Oomburkharee sections there are two tanneries of small extent, both of which were offensive; the one in Essajee Hussajee Street was in a very foul state, there being a large quantity of putrid refuse accumulated in casks and jars. In Khoja Street, Khara Tulao section, also there was an ill-kept offensive tannery. The wool trade occupies many labourers, chiefly women, who are congregated in large godowns in parties varying from about a hundred to two hundred picking the wool, and in none of those establishments which were visited was there any pro-

vision made for the wants of the workpeople and the maintenance of cleanliness. The smell from the washing and drying of the wool on an extensive scale along the Walkeshwur Road on the shore of Back Bay causes inconvenience to those frequenting that road. Indigo-dyeing is also a source of annoyance on the outskirts of the town, and as the population is spreading very rapidly, it will be a serious inconvenience if allowed to continue in its present localities. A much greater nuisance is caused to those dwelling in the more rural parts of the Island by the numerous stills that are at work distilling spirits from the liquor obtained by tapping the palm-trees; the stench from the foul huts where these stills are in operation is sickening. There are four hundred and fifty of them licensed.

53. The great numbers of horses that are kept in the town add greatly to the impurity of the air, and in none of the stables visited was there any drainage. In the better-kept stables under each horse there was a cesspit from which the fluid that did not sink into the earth was from time to time removed with buckets. In numerous instances the stable litter had largely accumulated and was rotting. There is no license required by the stable-keeper, nor is there any limit to the number of horses that may be kept in any place.

54. The cow-houses are much filthier than the stables, and large numbers of cows and buffaloes were seen crowded into small buildings in the midst of the densest part of the population, as in Coombarwaree Street and Bajee Palla Cross Lane. Among the many foul cattle-yards that were seen, two in the Tarwaree section may be specially mentioned: they are Motee Ram Waree and Daonee Waree on the Parell Road north of the Jejeebhoy Hospital. They have rows of thatched sheds, each with a flooring raised a foot or two above the mud that surrounds it, and that results from the excreta of the animals that are closely packed in them, there being no attempt at drainage or scavenging. In Daonee Waree there were three hundred and seventy-six head of cattle belonging to fourteen families, and in Motee Ram Waree three hundred and forty-seven belonging to thirty families. The owners and their families shared the sheds with their beasts. In going along the narrow lanes between the sheds the putrid mud has to be waded through, and it is unsafe to go through the more open spaces without a guide, as in them there are pits of semifluid filth which are masked by refuse

straw and chaff lying on the surface. The latrines in these enclosures were abominably filthy, the accumulated soil forming pools around them.

55. The owners of milch-cows or buffaloes evade the law which requires a licence to be taken for keeping any number above ten, and the law does not restrict the number of cattle that may be congregated in one place under different owners. There is, however, authority, if it were exerted, to exact a removal of this pestiferous uncleanness. Connected with the stables and cow-houses there is usually a large manufacture of *len* or *leed-kee-oplee*, which is objectionable. While fuel is so dear as it is at present the prohibiting the use of this material by the poor in their own households may not be desirable, but it is improper that the manufacture of the *oplee* for sale should be carried on in the town.

56. In Bhooleshwur there is the Pinjrapol, the receptacle for maimed, incurable, and useless animals of all kinds; but it is chiefly horned cattle, horses, and dogs that are sent to it. For a year or two past the horses have been transferred as received to Salsette to avoid the municipal tax, and when the horned cattle accumulate to an inconvenient number they are exported, a hundred or two at a time, to Guzerat. The dogs are not now exported; they are fed on bread and what milk any of the cows may give, and they die off, one of the keepers said, in about a fortnight after admission. The enclosures are large, and they were found to be moderately well swept, but it is said that in the rains the ground is covered with foul mud owing to its being neither paved nor metalled.

57. There are some dangerous or unwholesome trades that are carried on in a very limited scale it is true, but which are a nuisance to those in the immediate neighbourhood of their operation; such are the manufacture of catgut in Pinjaree Street, Mandwec section; the manufacture of sulphur matches near the market in Khara Tulao section, and the refining of sulphur in Bellasis Junction Road.

58. The increasing use of mineral coal in the many manufactories that are being raised adds much to the impurity of the air, as the enactment regarding the consumption of smoke has not been yet enforced even in the case of the Government chimneys.

59. The funeral-places are very numerous and are of various kinds, according to the customs of the different races of the people.

The towers in which the Parsees deposit their dead to be devoured by vultures are on Malabar Hill, and as the locality is at present but thinly inhabited they cannot be considered to be hurtful to health, although they are said to be now and then the occasion of offence, through the carrion-birds bearing away from them portions of their food to the neighbouring trees. The cremation grounds of the Hindoos are in all parts of the Island ; but it is chiefly on the beach of Back Bay that the dead are burnt. This mode of disposing of their dead would be unobjectionable were it always properly performed and in seclusion.

60. The Mortuary Report last published states 865 as the number of bodies given to vultures, and 4,750 as the number burnt in the year 1862. There were in the same year 9,897 buried. There are many burial-places scattered over the Island, all of which are supposed to be registered and to be under the law that requires the graves to be six feet deep. Burials, however, are continued in stony, rocky ground, where it is impossible to dig to half that depth ; such is the case at Walkeshwur, Wurlee, and Tankia Bunder, where the heaping up of stones over the corpse does not give perfect security against the attacks of dogs and jackals. During the year 1862, the last for which the reports are immediately available, there were three thousand eight hundred and seven bodies buried in the graveyards in Sonapoor and Girgaon at the windward margin of the densely-peopled Native Town. The graveyards are nearly all over-crowded, and those of the Romish Christians are on this account in a most objectionable state. In their burial-ground in Portuguese Church Lane, which has long been in constant use, and which has a surface of scarcely 857 square yards, there were 174 burials, and in the ground in Trinity Church Lane, which has an area of 539 square yards, and has long been over-filled, there were 236 burials. The funerals there are described as being indecent and revolting. The old Moosulman burial-ground at Sonapoor is considerably elevated above the neighbouring ground, owing to the human remains that have largely accumulated in it, and the wall on its sea-face being washed away, the waves in stormy weather make encroachments on it, disclosing tier upon tier of skeletons, and washing out the bones and strewing them on the beach. The graves along this shore are dug in calcareous sand and shelly

concrete, and in this porous ground there are numerous wells in the vicinity of the burial-grounds, and some even within them, from which drinking water is drawn.

61. Besides a few that were interred in churches and *durga*, there were buried in the cemeteries in the middle of the town 1,291, and of these burials 155 took place in the Khoja cemetery in Oomburkharee. On visiting this cemetery it was seen to be nearly filled with built tombs. At the north-eastern corner a quarry was being worked, and at its edges, where two graves had been cut through, bones were seen lying on the surface of the hard rock and but fifteen inches by measurement below the surface-level of the neighbouring ground, so that the graves could not have exceeded that depth. On another side of the quarry the section disclosed a depth of earth varying from six inches to two feet nine inches, and near the edge of this section there were recent graves; yet the persons in charge of the cemetery declared that the graves were always six feet deep, according to the police gauge, which was produced. Since the quarrying began interments had taken place in another part of the ground.

62. There are outlying villages of greater or less size whose condition requires notice, and among these there is *Cavelpoor* in Colaba, close to the Lunatic Asylum and near the Military Regimental Lines. It consists of numerous thatched huts irregularly placed, and having among them unmetalled dirty lanes, many of them having cesspits before them for foul water. There is a metalled road passing through it to the Asylum and another metalled road meeting the former at right angles, and along the sides of these there are side-gutters which in the lower road were stagnant and foul. There was no other drainage, and the filth of the place was greatly increased by the large number of draught and milch cattle that were kept in it. Close to the village there was a Moosulman burial-ground, and waste spaces were covered with prickly-pear bushes.

63. At Lower Colaba on the harbour side there is a small piece of rocky ground called Bumelo Island that is isolated at hightide. This is thickly occupied with miserable, thatched huts of fishermen, and finding the ground too small some have erected huts on posts

which bear them above the water. The hamlet itself was filthy, and its situation in the midst of the foul mud that is exposed at low water cannot but render it unhealthy. Cholera is often very destructive among its population, and in the recent epidemic twenty-five persons out of about two hundred inhabitants were carried off by it. It is probable that the reclamation of this shore will soon remove the hamlet.

64. Mazagaon is on a level spot of ground on the harbour shore and on the east side of the hill on which Storm Hall, Belmont, and, until a few months ago, Belvidere also stood. In it are the extensive premises and dockyard of the Peninsular and Oriental Company, to which, and to the pier, there is a good metalled road. Moozafur Pakadee Fifth Row, Lawrence de Lima Street, and Nawab Tank Lane also are metalled, and they have open side-gutters; the other streets are uneven, unmade, and without drain or gutter. Some of the houses are in gardens, but most of them are built in rows with intervals of two or three feet, and these gutters being unpaved the earth imbibes the liquid impurities of which they are the receptacles. Nearly all the houses have cesspits for foul water and refuse, and they are in most cases absorbent. Many have privies which are duly attended to by the sweeper, but there are in use privies with their seats over pits in the earth and for which the services of the sweeper are dispensed with; one such in the *interior* of a small house was brought to notice. The poorer people resort to the water-side, and connected with the dockyard there is a latrine on the shore where there is water only at hightide: the whole foreshore is very filthy. Beside Dockyard Road there is an unbuilt plot on which the fishermen hang their nets; it is a swamp into which the foul water from some of the houses in the vicinity finds its way, and into which the waste water of some of the neighbouring wells is directed. There are two burial-places adjoining the Romish churches; one of these is a terrace at the entrance of the larger church and a prolongation of its plinth, which is five feet above the adjoining road; it has a surface of about 41 by 53 feet; and in this small area and the interior of the church together there were thirty-five bodies buried in the year 1862. The other burial-ground is small and is walled; in it, and in a roofed charnel-house attached to the smaller church, fifty-



four were buried. The rules of these churches do not ensure more than eight months' rest in the grave ere another occupant may be intruded.

65. Beside Mazagaon there is the dirty village of *Noughur*, badly supplied with drinking water, and having a useless, foul, unwholesome tank in an old quarry hole. Not far from it is *Mathurpakadee*, with its filthy premises, and its only drain pouring black fetid mud into a hollow at the road side. A row of undrained cow-sheds in this village is a nuisance to the neighbourhood.

66. *Byculla* on the north of the railway bridge is a rapidly-increasing village, extremely filthy, and hitherto allowed to spread without design on a low level abounding with muddy pools and ditches, and which is only now being drained. The greater part of the people are inhabitants of poor huts without conveniences, and they pollute the fields. There are several tanks filled by the surface drainage of part of the Tarwaree section. The chief tank, called usually the *Sunklee Tulao*, is lined with masonry, and its water was used for drinking before that brought from Vchar was available: the other tanks are unbuilt, and are used by washermen and for watering cattle. There is a small private market for the sale of fish and vegetables; it was in itself clean, but its neighbourhood was very dirty.

67. *Walkeshwur*.—There are some houses on the south side of the road that are crowded together and ill ventilated. One large house had its foundation cut in the slope of the hill, the ground being left about four feet above the floors of the lowest back rooms. Those rooms, four in number, and inhabited by as many families, had each its only window opening a few inches above the outside ground, on which and along the wall there was a gutter; the foul air was kept out by closing the shutters even at the expense of having to burn lamps in daylight. The part of the village on the north of the road is mostly connected with the temples; it consists of substantial houses, which are not fully occupied except at the periodical pilgrimages, and then every part is over-crowded. There is a central hollow round which the houses are built, and the terraces and roads, except on the north side, are paved; the tank occupies the centre, and it is large and surrounded with flights of steps. At the sides

in some places foul mud was bare, and a greasy scum accumulated at the margin. In this water the inhabitants and pilgrims of recognized caste bathe and wash their clothes. On the morning on which it was last visited, although then comparatively deserted, thirty-eight persons were counted bathing, washing their body-clothes and cooking and water pots, or drawing water.

68. Last year the cleaning of the tank was begun, but the outburst of the monsoon stopped the work, and some of the mud removed from the bottom still was lying at the side. It was said that no privies were allowed in the precincts—all resorted to the sea-shore. The interior of the village, so far as seen, was cleaner than most Indian villages; the tank only was foul, and the circumstance of its foul water being the only water drunk by the people, deserves to be borne in mind when attempting to account for the heavy mortality that so often occurs at Walkeshwur when cholera is imported by pilgrims or otherwise. The burial-place is on the shore below the village, and the ground is so rocky that it is often only by heaping on earth and stones that the corpse is covered.

69. *Wurlee Koleywaree*, with a population of 3,400 persons, is a village consisting mostly of huts thatched with palm-leaves. It is built on the leeside of the north end of Wurlee Hill on low, irregular ground, without natural drainage, and no attempt has been made to supply it with any artificial drainage. The monsoon water lodges in hollows in which at this season the mud is barely dry. On the east and south-east there are upwards of fifteen acres of salt marsh, produced by the silting up of the mouth of one of the creeks that formerly met in the centre of the Island.

70. The filling up of this channel was brought about by the embankment that was thrown across it, and in which there is a sluice-gate still in use to allow the monsoon waters to flow from the Flats. The ground within the embankment is much lower than the marsh on its outside. Through the middle of the village a narrow, unmade lane, unfit for the passage of a wheeled vehicle, winds from south to north, and there are irregular crooked footpaths among the huts and the dungheaps that surround them. Beside some of the huts there are pits for foul water; but this is more frequently allowed to flow over the neighbouring ground to be absorbed or

evaporated. The more open spaces are frequented by those who are unable or unwilling to go to the water-side, which is the place generally used in the absence of latrines or private conveniences. The inhabitants are almost all fishermen, and the refuse of their nets is either cast on the shore or is hoarded to be sold as manure, and the smell of putrid fish taints the air. There is a burial-place on the south-west of the village where there is little depth of soil ; but some carry their dead to the burial-ground on the Mahim beach. The well-water is bad, and those who are not too indifferent as to its quality go to a distant source in the Mahim wood to get a purer drinking water. Pipes carrying Vehar water are laid down, but there is no public distribution of it, and but two or three persons have gone to the expense of having it laid to their houses.

71. *Mahim* is a large village, and has in its principal streets continuously built upper-storied houses. These streets are kept clean by each householder sweeping before his own door and public carts carrying away the sweepings ; but the lanes and side-streets are unmade and dirty. Some households have in their gardens necessities formed of matting, and which are left for the monsoon rain and the pigs to clean ; the rest of the inhabitants frequent the western or windward beach under the Moosulman burial-ground. The tidal current of the sea having been diverted from its course by the Lady Jejeebhoy Causeway has made large encroachments, and has left exposed in a sandy cliff several tiers of ancient Moosulman tombs. It appears as if drifting sand had covered the first tombs, and when all trace of them was lost fresh interments took place over them. The headstone of one grave high in the scarp was found to have six and a half feet of sand and soil above its top, and on the ground was a cocoanut-plantation with trees whose stems were some forty and some fifty feet high.

72. On the north of the village there is a small slaughter-house, from which a cast-iron pipe carries the blood and washings to the Mahim salt-water basin, but not so far as low-water line. The market-place is private property ; it is a low-roofed, tiled, and paved shed, that was found to be clean, but several feet of the public road beside it were unmetalled, and were said to be muddy in the rains.

73. South of Mahim there was a tannery far removed from the populous part of the village, but from its condition it was objectionable as regards the workmen and the few neighbouring inhabitants. The liquid refuse was allowed to form pools of mud ; no drainage was attempted, and the master of the establishment said that none was required as the moisture would dry up in the hot weather ! Putrid solid refuse was lying in heaps. Some of the tanks in Mahim section, such as the Toongur or Jamblee and the Hasallee tanks, have an exposed muddy bottom. The Hasallee Tank produces large quantities of lotus, the leaves of which are said to be sold on account of the municipality.

74. *Seoree Kolewaree* has between eight and nine hundred inhabitants. It is situated on the harbour shore, and consists of thatched huts irregularly placed and crowded together, and it has all the uncleanliness usually met with in a fishing village. It stands on a ridge formed by the upheaval of the shelly beach, and which forms a way of access to the basaltic rock on which Seoree Fort is built. There is the sea on one side of the ridge and a salt swamp on the other, so that there is no drinking-water procurable on the spot, and most of what is required has to be brought from a distance. Vehar water reaches this village, but the distribution to the public is by a stand-pipe, which runs so slowly as to do very little towards supplying their wants.

75. Almost all the villages that are a little way removed from the highways are accessible in the rains only by wading through mud ; they are irregularly built, without thoroughfares, and are unprovided with metalled paths of access, and having excessive dampness superadded to filth and want of ventilation, they are subject to great sickness. *Matoonga* and its neighbouring *pakudee* are instances of this.

76. I have to acknowledge the assistance in my inquiries which has obligingly been afforded me by the Municipal Commissioners, especially in their Acting Surveyor Mr. Sim's office. In many of my visits to the various parts of the Town and Fort I was accompanied and greatly aided by Assistant Surgeon Hewlett, the Heath Officer of the Municipality, and by Mr. Pritchard, the zealous Chief Inspector of the Surveyor's Department. Major Curtis, member of the

Municipal Commission, was with us on several of our visits, and was desirous that I as well as he himself should be made fully acquainted with the true state of the town. The President of the Commission also accompanied us on one occasion.

77. It is disagreeable both to describe and to read the narration of what is met with in an inquiry of this kind, and I have refrained from adding, as I might have done, to the number of the scenes of filth that I have given from my notes. Much of what I have mentioned many have ere now been removed by increased diligence in scavengering, and many of the grosser instances of neglect in that department which were reported by the Health Officer when we discovered them have doubtless been in some measure remedied. The description I have given is that of the state of Bombay as I saw it in my inspection at the end of January and the beginning of this month.

78. Of the many evils that the inspection of Bombay has disclosed that which is most prominent and at the same time most open to immediate remedy is its filthiness. The maintenance of thorough cleanliness cannot be looked for without a general and efficient house drainage; but the Island ought not to lie in its present disgraceful state of filth waiting for the execution of the new drainage scheme, which it must necessarily take some years to complete. To say what should at once be done to attain to a far better condition than the present, one has but to repeat the several requirements of the Conservancy Act of 1856, and the steps to be taken towards the fulfilment of these occupies a large place in the recommendations that I have to make.

(1) As there is so great an accumulation of arrears of cleansing to be carried out, and as the ways of cleanliness have to be taught to a people not zealous in the cause, I would suggest that there be appointed a person of judgment and energy who should give his undivided attention to this matter, and that he should have the means at his disposal of at once effecting what he sees to be requisite.

(2) I would suggest also that he should have a body of intelligent Inspectors of Nuisances, over whom he should be required to keep up a

close supervision to prevent oppression on their part and the receiving of bribes. For the better detection of what is contrary to approved ideas of cleanliness part of these Inspectors should be Europeans.

(3) One of the first measures to be adopted is to provide additional latrines for the houseless and for those poor people whose present habitations have no such accommodation. The latrines might be maintained by the Municipality according to Act XIV. Clause 61, or they might be licensed as allowed in Clause 62. In either case they ought to be effectually deodorized. The localities where additional public latrines are most urgently required are—

Division.	Section.
<i>A</i>	1 or Colaba . . . . . 1, Cavelpoor; 2, Lower Colaba.
<i>B</i>	1 or Market . . . . . 1, Mombadevee Tank Road; 2, Dack-jee Chal. 2 or Mandwee . . . . . 1, Nagdeo Row; 2, Old Jamlee Street; 3, Musjid Bunder. 3 or Oomburkharee . . 1, near Chuman Kiln Row; 2, Nowrojee Hill; 3, Clinch Bunder.
<i>C</i>	2 or Bhooleshwur . . 1, Bapookote Street. 3 or Kharatulao . . . 1, Trim buck Purshotum Street or near it.
<i>D</i>	2 or Walkeshwur . . . 1, north side of the village. 3 or Mahuluxmee . . 1, Tardeo.
<i>E</i>	1 or Mazagaon . . . . 1, at south-east shore; 2, Nowghur. 3 or Kamatheepoor . . 1, Byculla village. 4 or Parell . . . . . 1, near Sooparee Bagh or a little south of it. 5 or Seoree . . . . . 1, Ghorupdeo; 2, Seoree village.
<i>F</i>	1 or Seo . . . . . 1, Thakoorwaree. 2 or Mahim . . . . . 1, Mahim. 3 or Wurlee . . . . . 1, Wurlee Kolewaree.

The present latrines on the foreshore of Colaba, the Fort, and the Esplanade ought to be altered, so that the soil may not, as now, add to the offensiveness of the exposed mud.

(4) A larger number of filth-carts than there is at present should be maintained in good condition, to give facility for the removal of

night-soil by sweepers in private employ, and they should perambulate the suburbs and rural districts at stated hours, while depôt-carts should receive the burdens of sweepers at each public latrine.

(5) Appeals should be made to householders to provide necessities on their premises for their servants, as it is not just that the public should have either to bear the nuisance that many of them now cause, or to be put to the expense of providing accommodation for them.

(6) Clauses 40, 63, and 64, regarding filthy, unscreened, and ill-constructed privies, ought at once to be put in force ; and as baskets are not proper receptacles to be used in them, the substitution of earthenware or iron vessels, of which a pattern might be given, ought to be enforced. Clause 64 is applicable also to such localities as Funuswaree, Kandewaree, Antoba Gossaviwaree, Tarwaree, and others, and the present nuisances in them ought without delay to be stopped.

(7) Clause 41, relative to land in a filthy and unwholesome state, should be acted on in the rural districts where those passing along the roads are annoyed by the nuisance committed in the gardens or fields ; and the immediate inhumation of fish or other offensive manure ought to be insisted on.

(8) In exercising the power given to them in Clause 22, the Commissioners ought to render it obligatory on those who erect, or allow to be erected on their land, huts or sheds for habitations, to provide necessities for the use of the inhabitants.

(9) In drafting a Building Act the construction of proper privies for all dwellings should be required.

(10) To render the present indecencies on the public streets altogether inexcusable, the Commissioners ought without delay, and in accordance with Clause 61, to provide a sufficient number of public urinaries screened from view, yet of such construction as to prevent their being perverted from their intended use ; they might be so made as not to admit of persons sitting down in them.

(11) In conformity with Clause 47, all the drains and sewers should be emptied and kept clear ; and the main sewers ought to be assiduously deodorized with carbolic acid.

(12) Clauses 13 and 51, prohibiting filthy sewage being allowed to run on the street or into a surface-drain, and ordering houses to be properly drained, should be enforced.

(13) In compliance with the injunctions in Clause 58, foul air should be prevented from having egress from the sewers through the perforated slabs in use.

(14) Householders who have connected their bathing-places with the sewers by continuous pipes without trap or break should at once be informed of the danger to which the health of their families is exposed by thus ventilating the sewers into their houses, and the Commissioners should take immediate measures to have this hurtful mistake rectified.

(15) In conformity with Clause 12, the Commissioners should prevent their servants in the scavenging department from leaving on the roads the filth removed from the drains.

(16) It is recommended that the present open side-gutters in populous places be covered, and that those that are not now lined with masonry be made with inverted curve; also that the present practice of making the side-drains open and with flat inverts or unlined with any masonry be discontinued.

(17) It is desirable that the numerous unmade streets should speedily be made, and that those streets and lanes that have become ruinous be remade in accordance with Clause 9.

(18) That the Commissioners, in conformity with Clauses 10 and 11, take measures to maintain cleanliness not only in the great thoroughfares, but also in the more secluded streets and alleys.

(19) That the Commissioners refrain from any longer exercising the discretionary power allowed them by Clause 16 in depositing the filth collected from the streets in the neighbourhood of populous localities, and that without any delay whatever this practice be discontinued, and that they make the deposit, as proposed, beyond the limits of the Island.

(20) That Clause 32 be more strictly enforced than it now is; and that at least all houses that are now building, or that shall



hereafter be built or repaired, be required to provide eaves-gutters and spouts to carry the rain-water to the drains.

(21) That, as allowed in Clause 29 for registration and other purposes, the houses in each street and road be numbered in regular order, and that the number be painted conspicuously at the entrances: the even numbers might be on one side and the odd numbers on the other side of the street. The present assessment numbers are irregularly distributed, and are of little or no use for registration or direction: the assessor's books might be made to conform to this improved numbering.

(22) That, as allowed in Clause 27, the opportunities that occur of widening narrow streets be taken advantage of. And that in drafting a Building Act provision be made to leave it no longer possible, as now, when rebuilding a house to evade the law by leaving a part of the old front wall standing.

(23) That in the draft of a Building Act the Commissioners require that the height to which houses may be raised be limited, and that in no case shall the walls of any house or other building exceed in height two-thirds of the width of the street in which it is.

(24) That in the streets which are not twice as wide as the walls of their houses are high, the Commissioners refrain from exercising the power given them in Clause 35 to allow the projection of weather-frames, balconies, or eaves to exceed three feet.

(25) That in laying out new streets and disposing of the ground along them for building purposes, the Commissioners make it obligatory to restrict the maximum height to which the walls of the houses may be raised to two-thirds of the width of the street, and that they exercise such power as is vested in them to secure this relative width in all streets to which, according to Clause 21, they may be asked to give their sanction.

(26) That it also be obligatory, for the sake of free ventilation, that at the back of such houses there be left an interval of at least the same extent—that is, one and a half their height, between them and any other houses there may be in that direction.

(27) That no new street be sanctioned of less width than thirty-six feet, which, after deducting three feet on each side for eaves and weather-boards, will leave but thirty feet free for light and air.

• (28) That in sanctioning the erection of houses according to Clause 52, it be in future required in every building on the Flats or other low ground, that the plinth be made higher than the nearest road, whatever be the depression of the ground on which it is being erected.

(29) With a view to improving the ventilation of the town, besides diligently widening existing streets, it is desirable that advantage be taken of the health-giving sea-breezes, by opening up avenues from eighty to a hundred feet wide, running from the seashore on the west towards the east; several such avenues might be made with great benefit to health. On the map of the Native Town it is seen that one such road is now in great part traced along Churney Road at the north of the English burial-ground, Thakoorwarec Lane, and by the south of the Pinjrapol to Parell Row, and it might from thence cross the Bindee Bazaar and pass eastward through Bengalpoor to Nowrojee Hill, maintaining a straight course and the same width throughout. Another of these wide roads might with advantage to convenience and healthful ventilation, be opened along the line of Old Sonapoor Lane, and through the dirty irregular labyrinth of Cavel and nearly due east through the Market section and the dense foul Mandwee section to Musjid Bunder.

(30) It is recommended that in all extensions of the town, open spaces should be secured for the purposes of ventilation. In the parts already occupied by dwellings it would only be at very great pecuniary cost that such spaces could now be made. There is, however, a spot of large size in the heart of the town that it may be found possible to obtain for the public benefit. The Moombadevee Tank in its present state is a source of insalubrity to the neighbourhood owing to its filthy state, and were the Commissioners to insist, as it is their duty to do, on its foul mud being thoroughly cleared out and never allowed to accumulate, the expense of its maintenance would be great. But were the greater part of the tank filled in, and were the remainder lined with masonry, it could be more easily cleared

out and kept clean ; and were small screens somewhat like those at the Parell Tank built at its side under the shelter of which those who have the right of access to the water could bathe, while the waste water flowed into the street-drain, the water in the tank could be kept clean. This portion might be enclosed with an iron railing, while the rest of the space might be thrown open to the public. If this could not be arranged between the Commissioners and the trustees of the tank, the public might still have the benefit of increased circulation of fresh air were it arranged that after diminishing the area of the tank, the whole of the rest of the present enclosure should be kept clean and dry and free from buildings, and be surrounded by an iron railing instead of the present dead walls and petty traders' stalls. At the north-east end of the tank there is a filthy yard occupied by bullock-drivers with their cattle and carts and a manufactory of *oplee*. This yard might be added to the proposed square. The whole might be made ornamental, and it would be a fitting place in which to erect any public or civic monument.

(31) There is another private tank, that of Bhooleshwur, which calls for the notice of the Municipal authorities. It is in an extremely foul and unwholesome condition, and ought to be cleaned and lined with masonry. There are other private or public tanks which ought to be improved or filled up. Framjee Cowasjee's Tank on the Esplanade, Baboola Tank, the tank in Kamathecpoor section near the Dhurmsala, Nagpara Tank in Bellasis Junction Road and the Byculla or *Sunklee Tulao*, it is recommended should be improved for the purposes of bathing and washing by having screens built for shelter and to prevent the reflux of the waste water. The other Byculla tanks might be improved for the use of cattle. It is recommended that Cowasjee Patel Tank and Khandia Tank be filled up and the recovered ground be appropriated to public markets. A foul quarry hole in an old Moosulman burial-ground in Jail Road ought to be filled up.

(32) It is recommended that the tanneries and sulphur refinery and sulphur-match manufactories be if possible removed from the populous parts of the town, and that such as cannot legally be removed, be so improved as to be no longer so great a nuisance as they now are to those near them.

(33) It is desirable that the Commissioners should obtain an amendment of Clause 43 of Act XIV. to bring cow-houses and stables more under their control, and that it should provide that all keepers of cows the produce of which is for sale, and that every keeper of a stable for horses, cows, bullocks, or buffaloes for other than private use, be required to have a licence.

(34) The Commissioners, however, under Clause 41 have power, which ought at once to be used, to clean the filthy and unwholesome cow-houses and stables.

(35) It is recommended that all burial-grounds in the town should as soon as possible be closed, and it is urgently required that cemeteries be at once provided at a distance from the town, as at Matoonga, for the several communities of Christians, Moosulmans, Hindoos, and others, in order that the over-crowded burial-grounds may be closed in accordance with the authority given in Clause 107.

(36) It is desirable that burials in churches be forbidden by the Commissioners, except in cases analogous to those in which in England the permission of the Secretary of State would be given to sepulture in St. Paul's Cathedral or Westminster Abbey.

(37) It is recommended that the Commissioners should in future and in all cases exercise the power given to them in Clause 22, to prevent the erecting of huts irregularly on bad sites or with insufficient elevation of floor, or without necessities and other provision for the maintenance of cleanliness, or without surface drainage, or paths fit for all seasons.

(38) It is recommended that the huts now deficient in the above points be dealt with according to Clause 23, and among many others such there is a group of huts at Cavelpoor in Colaba near the military cantonment, others in Moteeramwaree and Daoneewaree, Parell Road, in Oomburkharee—Nul Road on the side of a filthy ditch, and many in Funuswaree and other parts of the Dhobee Tulao section that ought to be at once removed and rearranged.

(39) That the premises of the numerous distillers in various parts of the Island be frequently inspected, and that the present "offensive or unwholesome smells" arising from them be abated according to Clause 102.

(40) That in all instances coming under Clause 42 the hedges be reduced to the regulated height, and that prickly-pear, which is abundant in many places, be if possible eradicated.

(41) That all dangerous quarry-holes and pools be either filled up or fenced; and that all tanks and wells be fenced or covered under the provision of Clause 90: there are several such old quarry-holes along the Parell Road. At Nowghur the filthy tank ought to be filled up.

(42) That the unwholesome swampy hollows and pools in the neighbourhood of the Grant and Parell Roads be drained or filled up in accordance with Clause 82.

(43) The distribution of Vchar water is too scanty, and it is recommended, as the beginning of an increased supply to the public, that fountains be at once erected in Khetwadec at the junction of Grant and Duncan Roads in supersession of the water from Khuturwarce in the Two Tanks, also at Nowghur, Wurlee Kolewarce, and at Walkeshwur, and that the present insufficient supply to Seoree be increased.

(44) That fountains be substituted for the unclean dipping-wells.

(45) That wherever Vchar water-pipes are laid on, whether for public fountains or private use, there shall be provided sufficient pavement and sufficient drains to prevent the waste water from producing pools or causing unwholesome wetness of the neighbouring ground. That all future connections with the mains be absolutely forbidden until satisfactory provision be made for carrying off waste water.

(46) Towards the improvement of the suburban and rural districts it is recommended that Clause 23 be acted on where hamlets have been recently erected, as at Byculla, Ghorupdeo, and elsewhere.

(47) And in addition to what has already been recommended, that in the large village of *Mazagaon* the unmade roads be metalled, and that the swamp beside Dockyard Road be drained.

(48) That a metalled cart-road be made through *Wurlee Kolewarce*; that the swampy hollows in the village be drained; that paths be made among the huts; that surface-drains be provided; that a scavenger's cart be provided, and that the inhabitants be obliged to keep the neighbourhood of their huts and houses clean,

and deliver the sweepings of the roads to be carried away in the cart ; and that burials in the rocky ground south-west of the village be stopped. A public necessary and the distribution of Vehar water to the public have been recommended above. It is very much to be desired that immediate measures be taken to reclaim the salt marsh on the *south-east* side of Wurlec Kolewaree.

(49) At *Mahim* the cross-roads ought be metalled and the side of the road close to the market ought also to be metalled. Drainage and cleanliness in the tannery ought to be exacted. Connected with the present and the projected slaughter-houses the drainage ought to have its outfall into the strong ebb-current at the bridge of the causeway. A latrine has already been recommended above. More cleanliness ought to be enforced in the by-streets of Mahim and in the Mahim woods, all the tanks in which the muddy bottom becomes exposed ought to be cleaned and deepened.

(50) The thorough cleaning of *Walkeshwur* Tank is urgently required for the sake of the lives of the inhabitants of the village and of the many persons that periodically visit it. The difficulty of cleaning it unless it were empty, and the expense of doing this so frequently as is necessary, would be very great, and it seems worthy of the consideration of the trustees or proprietors whether it is not advisable to have a cutting or tunnel made by which the foul water and mud could be discharged every year at the beginning of the rains, so that the sluice being afterwards closed only clean water would be impounded. Even were this done the practice of drinking the water that is used for bathing ought be abandoned, and a supply of Vehar water, which is now most urgently required to replace that of the filthy tank, would still be required by the people for drinking and cooking. If there be valid objections to the delivery of the water at the top of the hill on which the village is placed, it might be supplied by fountains either at the north or the south base of the hill, or at both.

Burials in the rocky ground at Walkeshwur ought to be at once prohibited. The erection of a latrine here has before been recommended.

79. It is much to be desired that the Commissioner of Police, for the sake of public decency, cleanliness, and health, should order Clause 84 of Act XIII. of 1856 to be made operative, so that a continuance of the abominations that are perpetrated in the streets and public places by day and by night be rendered impossible.

80. To Government in the Revenue Department it is respectfully represented that it appears to be of essential importance for the health of Bombay that the reclamation of the salt marshes at the north and east of the Island, which has already come under the consideration of Government, be promoted as much as possible, and that all contemplated reclamations on Bombay be so devised that the Island may soon be delivered from the evil of a foul foreshore.

A. H. LEITH, M.D.,

Deputy Inspector General of Hospitals.

*Bombay, 29th February 1864.*

### POSTSCRIPT.

The total population of the Island of Bombay and the shipping in the harbour by the Census that has been taken now, when it is supposed to be at its maximum, is found to be 816,562 persons. From the few details that are available, it is calculated that in the distribution of the people those in the urban Sections have for each person an average surface of only 8·3 square yards in Kharatulao, of 7·5 in Mandwee, 6·9 in Bhoolshwur, 6·1 in Oomburkharee, and of only 5·4 square yards in Market Section.

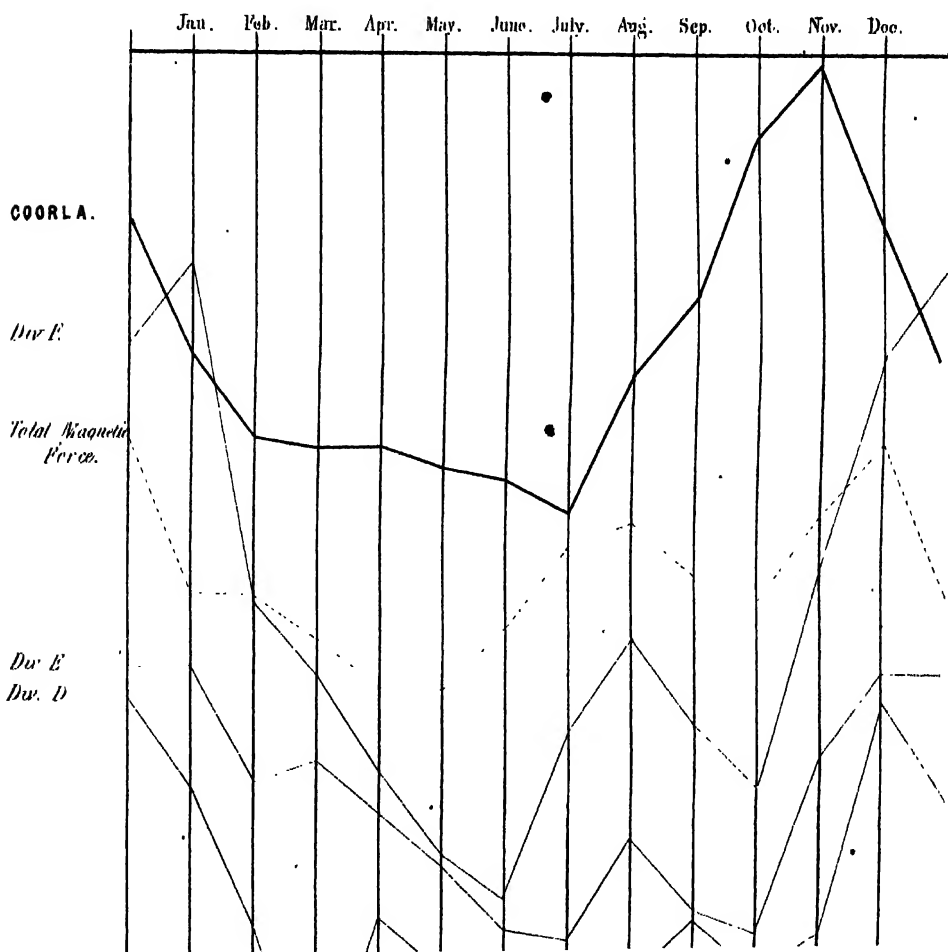
A. H. L.

*30th March.*

*Ratio of monthly Fever Deaths in Bombay and its Divisions from 1849 to 1863, corrected for inequalities of months.*

*Also Ratio of admissions for Fever to other admissions, at Coorla from 1857 to 1863.*

*The dotted Line shows the Total Force of terrestrial Magnetism from 1847 to 1863.*







No. 807 OF 1864.

GENERAL DEPARTMENT.

*Bombay Castle, 2nd May 1864.*

### RESOLUTION OF GOVERNMENT.

This Report of Dr. Leith places in a most striking and unquestionable light the urgent want of more effective measures for improving the sanitary condition of Bombay.

2. The measures which Dr. Leith believes to be necessary may be divided into two heads:—

1st—The provision of larger funds for various Municipal expenses; and

2nd—The provision of more abundant and better agency for directing the expenditure of those funds.

3. For both purposes it is probable that some modification of the existing law may be needed. One hundred copies of the Report should be sent at once to the Bench of Justices, with a request that the Report may receive the early attention of the Bench, and that Government may be favored with the views of the Bench regarding the measures to be taken for a reform of the Municipality, a subject which, Government believes, has for some time past occupied the attention of the Justices.

4. His Excellency the Governor in Council would note generally the points which Government consider it would be desirable to keep in view:—

1st—It seems most desirable that the Justices should, as a body, have a more constant and effective control over the expenditure. This might be easily effected by requiring that all expenditure should be voted by the Justices in full

Sessions on a Budget of expected receipts and proposed disbursements previously prepared and submitted by the executive of the Municipality.

*2nd*—One annual meeting for the General Budget, and general meetings summoned, as at present, on special occasions, would enable the Justices as a body to exercise a general, intelligent, and effectual, control without tasking too much the time and attention of individual members.

*3rd*—The executive should remain, as at present, responsible for the works to be proposed for execution, and no works should be proposed or voted save on a proposition from the executive, who will be responsible for shaping all suggestions as may be best suited to the public benefit. The test of the measures proposed being so suited to the wants of the public, will be applied by the discussion which the proposals will undergo when laid before the meeting of Justices.

*4th*—When the funds for any work have once been voted, the executive should be entirely responsible for the speedy and economical execution of the work: a report of what has been so done and of what further is proposed would be a necessary accompaniment to the Budget.

The constitution of the executive body clearly requires revision, and for this the vacancies in the Board of Commissioners afford at the present moment unusual facilities. The constitution of the present Municipal Board appears to be radically faulty, inasmuch as there are three independent Commissioners with co-ordinate powers, the general effect of whose action must necessarily be to check, counteract, and paralyze, each other. On the other hand, the subordinate executive staff seems to be miserably deficient.

*5th*—The entire executive power and responsibility, the Governor in Council considers, should be vested in one Commissioner, who should be liberally paid on a scale to

secure the entire time and attention of a thoroughly qualified Officer. He should be entirely unfettered, except by his responsibility to the Bench of Justices to propose, and, when they had sanctioned and given him the means, to carry out, all necessary works. He should appoint his own subordinates, of which a liberal Establishment should be allowed him in the shape of Surveyors, Inspectors, &c. He should be furnished with a Consulting Engineer as adviser, and a Sanitary Officer, who might both be appointed, as he is himself, so as to be independent of him in the advice they may give, without in any way diminishing his power and responsibility in executive matters.

With regard to the question how the chief Executive Officer should be appointed, the opinion of the Justices should be asked; probably the most satisfactory course would be that he should be appointed, as the present President is, by Government, with liability to removal on the vote of a general meeting of the Justices.

With regard to funds, it would appear that much more than at present might be made of existing resources, and the powers of self-taxation now vested in the Bench of Justices might with advantage be considerably extended.

5. The Governor in Council desires clearly to record his opinion that blame cannot be fairly imputed to the late Municipal Commissioners for the undoubted failure of the system they were appointed to administer. They appear to have done their best to make the most of very inadequate means and ill adjusted powers, and Dr. Leith records that they frankly and readily aided him to discover the weak points of the system and to suggest remedies.

6. The thanks of Government should be conveyed to Dr. Leith for his Report, which probably for many years to come will serve as an index of what is to be done to improve the sanitary

condition of the Town and Island, and will add one more to the many obligations of the kind which Dr. Leith has conferred on the Island.

A. D. ROBERTSON,  
Secretary to Government.

Ordered that copies of the above be forwarded to—

Dr. A. H. LEITH, M. D., Deputy Inspector General of  
Hospitals,

The CLERK to the JUSTICES of the PEACE,

The CLERK to the MUNICIPAL COMMISSIONERS.

A. D. ROBERTSON,  
Secretary to Government.

**SELECTIONS FROM THE RECORDS OF THE BOMBAY  
GOVERNMENT,**

**No. LXXXI.—NEW SERIES,**

**P A P E R S**

**RELATIVE TO THE**

**INTRODUCTION OF REVISED RATES OF ASSESSMENT**

**INTO THE**

**HOONGOOND & PART OF THE UTINEE  
TALOOKAS**

**AND THE**

**YADWAR MAHAL OF THE GOKAK TALOOKA,**

**ALL OF THE BELGAUM COLLECTORATE.**

**WITH AN APPENDIX BRINGING UP THE REVENUE HISTORY OF  
THESE DISTRICTS TO 1862-63,**

  
**WITH ONE MAP AND TWO DIAGRAMS.**  


**Bombay:**

**PRINTED FOR GOVERNMENT**

**AT THE EDUCATION SOCIETY'S PRESS, BYCULLA.**

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**1864.**



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No. 267 OF 1853.

From Captain W. C. ANDERSON,  
Superintendent of Revenue Survey and Assessment, S. M. C.,

To Captain G. WINGATE,  
Revenue Survey Commissioner.

SIR,—I have the honour to forward for the consideration of Government a detailed report of the revised assessment introduced at the settlement for 1851-52 into that portion of the Belgaum collectorate included in the whole Hoongoond talooka, fifty three villages of the Uthnee talooka, and the Yadwar mahal of the Gokak talooka, as sanctioned by Government letter No. 1918, dated 23rd March 1852.

2. It happens that in the performance of my duties as an Assistant I was never employed in either of the three talookas now under report. When I received charge of the department from you the classification of these districts was very nearly completed, and you had made the investigations preliminary to deciding on the revised rates. Nothing remained but for me to introduce the rates fixed by you.

3. The Hoongoond talooka is situated further to the east than any other portion of the Belgaum collectorate. It is, as will be seen from the accompanying map, of compact form, and bounded on the west and north-west by the Badamec and Bagulkote talookas; on the north-east it is separated from the Sholapoor collectorate by the river Krishna, and on the east and south it is bounded by the territories of the Nizam. The talooka is formed into two divisions—one under the Mamlutdar, who has his kutcherry at Hoongoond, and the other, comprising the western part, under a Mahalkurree stationed at Ilkul. The revised assessment proposed in this report extends only to the villages directly in Government management, in all one hundred and forty-two. The number of Government and alienated villages under the Mamlutdar and under the Mahalkurree, with the names of the

sumnuts or ancient divisions in which they were classed, are shown in the following statement :—

Present Divisions.	Names of Sumnuts or ancient Divisions to which the Villages belong.	Belonging to Government.			Alienated Villages.				Grand Total of Government and Alienated Villages.
		Villages.	Bazars.	Total.	Jodee or subject to Quit-rent.	Surva Enam or Rent-free.	Jagheer.	Total.	
Hoongoond—Mamlutdar's.	Sumnut Havelee .....	2	..	2	13	4	..	17	19
	Nagnoor .....	7	..	7	..	..	..	..	7
	Sumnut Kumuldinnee .....	6	..	6	..	..	..	..	6
	Do. Ramwadgee .....	5	..	5	..	..	..	..	5
	Do. Magee .....	7	..	7	..	..	..	..	7
	Do. Dhunnoor .....	2	..	2	..	..	..	..	2
	Do. Murrol .....	5	..	5	..	..	..	..	5
	Do. Moolloor .....	4	..	4	..	..	..	..	4
	Do. Chiknall .....	10	..	10	..	..	..	..	10
	Do. Kulloor .....	15	1	16	..	..	..	..	16
	Do. Belgul .....	4	..	4	..	..	..	..	4
	Phootgaw (broken up) .....	3	..	3	..	..	..	..	3
Ilkul—Mahalkurree's.	Sumnut Sungun .....	12	..	12	2	..	1	3	15
	Do. Kumutgee .....	9	..	9	2	..	..	2	11
	Total .....	91	1	92	17	4	1	22	114
2	Sumnut Thoomb .....	28	..	28	4	..	..	4	32
	Do. Nundwalgee .....	4	..	4	..	..	..	..	4
	Do. Kurde .....	8	..	8	..	..	..	..	8
	Do. Bellacoundee .....	8	1	9	..	..	1	1	10
	Phootgaw (broken up) .....	3	..	3	..	..	..	..	3
	Total .....	51	1	52	4	..	1	5	57
	Grand Total .....	142	2	144	21	4	2	27	171

4. The sandstone hills of Badamee and Bagulkote extend a short distance into this talooka on the west. The soils here are sandy and poor, and the use of manure to a considerable extent is necessary to obtain a fair crop. The vicinity of the hills gives this portion of the district some advantage in point of climate as the fall of rain is greater than it is farther to the east. One of the Badamee ranges enters Hoongoond at the south-west corner of the talooka, and passing through an intervening piece of the Nizam's territory is prolonged

into the Ilkul mahalkurree's division in the south-east of the talooka, but at a lower elevation and in a less continuous form than is exhibited farther to the west. The remainder of the talooka consists of an unbroken plain. The soil is generally black and of good quality, particularly that in the north in the vicinity of the Krishna and Mulpurba rivers. The climate of Hoongoond on the whole is much better than that of the districts immediately to the west. It appears that the line of country bordering on the ghauts when the rains are very heavy is succeeded by a belt, where the fall is scanty and extremely uncertain. This again is succeeded to the east by a tract in which the fall is sufficient and very certain both in time of falling and in quantity. I would place Hoongoond on the western edge of this last-mentioned tract. The monsoon is so even and certain that a failure of crops from deficiency of moisture is represented to be of a very rare occurrence.

5. The cultivators of this talooka are a hard-working, laborious people, and their husbandry enjoys a high reputation, being considered superior to that of the adjacent districts of the collectorates Badamee and Bagulkote; they are consequently better off than the people of those districts, and may, in fact, on the whole be described as in very comfortable circumstances. They manure their fields extensively—in the light sandy soils of the western parts often every year, and at least every second year. In the black soils manure is used every third or fourth year, and its use is confined to the lands within a certain distance of the village. The manure is almost invariably carried to the fields on the backs of bullocks. Carts are little used. In fact there are from the returns only eighty-eight carts in the whole one hundred and forty-two Government villages. The crops do not differ from those grown elsewhere in similar black plain tracts—jowaree, bajree, wheat, gram, and cotton being the principal, which last-mentioned crop thrives well and is grown to a larger extent. In the western villages and in the hilly tract in the south-east of the talooka a good number of fine mango-trees are found, the red and sandy soils of those parts being very favourable to the growth of these trees. With the exception of a few tamarinds and babuls the northern and eastern parts are treeless. Under the Survey settlement, securing the fruit to the owners, the number of mango-trees in those parts of the

talooka suitable to them will doubtless greatly increase. In fact in some places trees had been already planted in anticipation of the introduction of the new regulations.

6. The population of the talooka is by no means thin, being about 145 per square mile; they are for the most part agricultural; but in many of the villages are cotton-weavers in some numbers, particularly in Goodoor, Sooleebhavee, Kumutgee, and most of all in Ilkul.

7. At Ilkul no less than 3,000 souls are employed in cotton and silk weaving, working about 500 looms. Sarees and cholees (women's clothing) are the staple manufactures of the place, particularly the latter, of which between one and two thousand rupees' worth are said to be sold every week. These cholees cost from two annas to five rupees each, and are made of cotton or silk and cotton mixed. The silk is obtained from Bombay and from Bangalore. The cotton yarn is mostly of native manufacture. But little English being used, both cotton and silk are dyed at Ilkul. Most of the looms are owned by the weavers themselves; but there are some master-weavers owning up to 25 or 30 looms. A weaver can earn from  $1\frac{1}{2}$  to 6 annas a day according to his skill. The manufactured goods are exported to Sholapoor, Poona, Hooblee, Belgaum, Bagulkote, and the Nizam's country. The weavers themselves assert that trade is now much less brisk than it was ten years ago, and attribute this to the enhanced price of raw silk and to the competition of English manufactures. This assertion of theirs may, I think, be very reasonably doubted, as it is admitted that the number of looms is increasing, and a new quarter has been recently added to the town of Ilkul.

8. In Kumutgee about 1,000 souls derive a livelihood from weaving, and about 200 from dyeing. The manufactures of this place are similar to those of Ilkul, but a greater proportion of the people are employed in the manufacture of coarse cotton-cloth. There are also some 50 houses of coppersmiths, whose wares are exported to Bagulkote, Belgaum, and the Nizam's country. In Sooleebhavee there is a weaving population of about 1,400, employed almost entirely in making cotton fabrics. In Goodoor are about 300 weavers; some are employed in the mixed cotton and silk, and some in pure cotton manufacture. Besides the manufacturing population

collected in the four towns above-mentioned, in about ten villages weavers are found in smaller numbers, amounting in the aggregate to about 500 individuals.

9. The mixed cotton and silk manufactures, by far the most valuable, may be considered to be prosperous and on the increase. With these English manufactures have not yet seriously interfered ; but there can be little doubt that in this talooka as elsewhere the weaver of common cotton fabrics finds himself undersold by English manufactures, and that the competition on their part is yearly increasing and gradually driving him out of the field.

10. This talooka is well supplied with bazars ; within the district are Ilkul, Ameenghur, Hoongoond, Kumutgee, and others of minor consequence in the adjoining talookas. Jaleehal and Bagulkote are resorted to—the former for the sale of agricultural produce, and the latter principally for the sale of manufactured goods. Of those within the talooka, Ilkul and Ameenghur only may be considered bazars of export. The staples of Ilkul, which is the principal bazar of the district, are the silk and cotton manufactures before-mentioned, the rice grown in its vicinity, and other agricultural produce. It is numerously attended by the people of the surrounding villages and also by those of the adjoining Nizam country. The military cantonment of Lingsoogoor, where one of the Nizam's regiments is stationed, is only 24 miles from the Hoongoond frontier, and part of its supply of grain is derived from the Ilkul bazar. Ameenghur is a great mart for Concan produce—cocoanuts, rice, pan, salt, &c. ; it is also a large cattle market, about 500 head being exposed for sale on market day every Saturday. At this place reside several wealthy sowcars, through whose hands most of the cotton grown in the district, deducting what is retained for home consumption, finds its way to the coast.

11. It may be estimated that about the eighth part of the whole population of the district derives a livelihood otherwise than by agriculture. The non-producing but food-consuming population and the cotton trade added to a stable climate has supported this talooka, and rendered its agriculture so much more steady than that of other districts under the old assessment. It will however, I think, be shown that this agriculture was by no means as prosperous as it

might have been, and that before the commencement of the survey it was at best stationary, if not commencing to retrograde. Here as elsewhere the commoner indigenous manufactures could not stand up against the increasing competition with England, and in their decline could but depress their dependent agriculture.

12. The one hundred and forty-two villages of the Hoongoond talooka contain by the present survey 240,088 acres of arable land, and 38,289 acres of unarable land, hills, beds of nullas and rivers, roads, &c.—in all 278,316 acres.

13. The measurement of the above villages was commenced in the season of 1848-49 by Lieutenant Biggs and Mr. Price, and completed by Mr. Springer in the two following seasons. The classification was begun and completed by Mr. Young in the season 1850-51. The amount of test taken and its result are exhibited in the following statements :—

Government Villages.					Nature, Extent, and Result of Test.											
Number.	Fields.	Arable Acres.	Nature of operation.	Total number of Villages tested.	By European Officers.				By Natives.				Total Test.			
					Fields.	Acres.	Average Error.		Fields.	Acres.	Average Error.		Fields.	Acres.	Average Error.	
							Per Cent.	Per Field.			Per Cent.	Per field.			Per Cent.	Per Field.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
142	13,555	240,087	Measurement.	135	1,761	35,448	93	Rs. a. p. ....	70	...	Goondas 28½	..	1,831	30,781	104	Rs. a. p. ....
142	13,555	240,087	Classification.	102	1,027	17,278	..	0 0 6	...	...	..	..	1,027	17,278	..	0 0 6

Total No. of Fields tested.	Number of Fields in which the difference between Original and Test Measurement did not exceed—											
	1	2	3	4	5	6	7	8	9	10	11	12
	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.
1831	1541	280	5	3	2	..	..	..	..	..	..	..

	Number of Fields in which the difference between Original and Test Classification was—							
	Nothing.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
		0 0 1 to 0 0 6	0 0 7 to 0 1 0	0 1 1 to 0 1 6	0 1 7 to 0 2 0	0 2 0 to 0 2 6	0 2 7 to 0 3 0	0 3 1 to 0 3 6
1027	130	463	366	55	12	1	..	..

14. The above exhibits a very extraordinary degree of accuracy in the measurement. Out of a very large test of the measurement in but ten numbers were found errors in excess of 2 per cent., and not a single error of the amount of 5 per cent. appears in the statement. In the classification the absence of error is no less remarkable: out of 1,027 numbers tested but one solitary error in excess of two annas was discovered.

15. This talooka originally formed part of the kingdom of Anagoondce, then on the fall of this kingdom came under the kings of Beejapoor, and when they in their turn fell it was under the emperors till the rise of the Peshwa under whom it remained, with the exception of a short interval under Tippoo Sultan, till he was supplanted by the rule of the British government. There appear to be no peculiar circumstances connected with the rule of former governments calling for any further notice.

16. A few years after our acquisition of the country this talooka was surveyed under the orders of Mr. Thackeray, the then Principal Collector, and the acres obtained from this survey formed the basis of the accounts since 1825 up to the time of the present settlement,



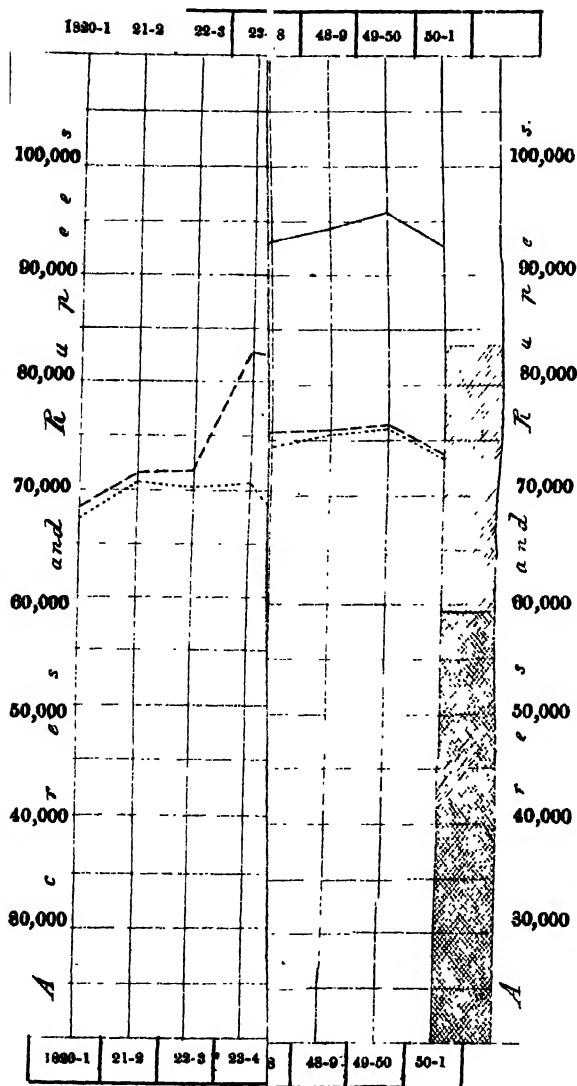
No systematic attempt at a revision of the assessment was ever made. In 14 of the 18 sumnats or ancient divisions the challee tenure prevailed to a considerable extent. This challee was land generally of the best in the village, and bearing a very high assessment. The holding of a certain quantity of this land involved the possession of a certain amount of khuttgootta, which was land bearing a very low assessment. No one was allowed to throw up his challee and keep his khuttgootta. In the old times if a ryot complained of the assessment on his challee and khuttgootta being more than was fair, he was quieted by the grant of land on kowl, at first at a nominal rent. During our management challee land alone has been frequently thrown up, a proportionate increase being made on the assessment of khuttgootta. The relinquished challee might be taken up by another cultivator, the district authorities reducing the assessment on it to that of the average of the surrounding land. By this means the challee land of the talooka was reduced from 17,682 acres in 1821 to 8,923 acres in 1845, since which period the practice of altering the tenures and standard assessment has in a great measure ceased. In the course of time the distinction between land originally challee and that on the lower assessed tenures had become in a great degree lost, and an extreme inequality in the assessment of land of similar qualities was in many cases the only surviving result.

17. Complete returns of the cultivation, assessment, and remissions of the Hoongoond talooka have been obtained for every village since it has been in the hands of Government, with the exception of the first two years, and are appended to this report and are also exhibited in the accompanying diagram prepared in the usual form, from which, however, are excluded one village which lapsed to Government in 1850 and the four villages of the Nargowra of Kun-

\* Government letter No. 6900, dated 23rd September 1850. digul, which, after investigation on the part of the Enam Commissioner, were directed by Government\* to be attached and the proceeds

placed in deposit pending receipt of a reply to a reference made to the Court of Directors. The new rates were introduced into these villages in accordance with paragraph 19 of the joint report rules. The revenue returns of these six villages, which are excluded from the diagram, will be found separately shown for as many years as

# DIAG COLLECTIONS in the case of the



## EXAMPLE.

In 1849-50.

Cultivation.....	95,813
Assessment .....	76,245
Collections .....	761,181
Remissions .....	64
Average rate of Assessment..	0-12-8 .7
Do. of Collection..	0-12-8 .6

The various item presents the Cultivation; the broken line where the zigzag line crosses the perpendicular of remissions in each year. According as the year marked by that perpendicular, exceeds the Survey Assessment of the whole arable land at d in 1851-52.



they were obtainable for under their respective years in the figured statement marked A in the appendix.

18. No records of the amount of cultivation in the earlier years of our rule are available. The smallness of the remissions exhibited in the diagram for the first two years is due to the sum fixed for collection at the jumma bundee alone appearing in the accounts. From 1825-26 to 1831-32 appears a large cultivation, kept up during the last four years by extensive grants on kowl, and very large remissions accompanied by a rapidly-declining revenue. In 1832-33 occurred a great famine, consequent on entire failure of the monsoon; this consummated the ruin of many of the poorer cultivators and compelled them to emigrate; their fields fell waste, and the total cultivation declined upwards of 15,000 acres in this one year. The year after the famine the gross assessment was, under the auspices of Mr. Nisbett, raised to the figure at which it had been three years previously on a much more extensive cultivation; but this proving a fruitless measure, the gross assessment was again lowered in the next year, and apparently with a beneficial effect, as the realisations were larger on a somewhat decreased cultivation.\* From the first year of our management up to 1834-35 the great fluctuation of the lines of the diagram strongly point out the destructiveness to the revenue of a high nominal assessment, entailing the necessity of enormous remissions, and a system of this kind is not only injurious to the revenue, but it must be in the last degree demoralising to the people, who are driven to every kind of artifice to escape paying what they have bound themselves to pay, in the end the actual remissions falling to the share not of those most in need of it, but to the most cunning and clamorous. From 1834-35 a stricter system prevailed, marked by the close coincidence of the dotted and broken lines of the diagram. From this period the amount of remissions in ordinary years experienced a pretty steady decrease, and with the exception of the year of deficient rain (1838-39) no sudden fluctuations of cultivation or revenue have occurred. The fall of cultivation in 1843-44 may be attributed to the extremely small amount remitted for two or three years about that time. The marked increase which took place subsequently to 1845-46 is probably due to the rumours of the approach of the operations of the present survey. The revised assessment had\*

been lately introduced in two not very distant talookas of the Dharwar collectorate—Nowlgoond and Dumbul. Every cultivator would feel induced to go as far as his means would allow to regain possession of the old lands of his family, which an excessive assessment had compelled him to relinquish. In 1850-51 this increase of cultivation received a check, partly from the late setting in of the monsoon prognosticating an unfavourable season, and partly from the power of enduring the old assessment till the introduction of the new having been miscalculated by the cultivators.

19. From an inspection of the tabular statement following paragraph 26 it will be seen that on an average during the whole of our rule considerably above one-third of the whole arable land of this talooka has lain waste, and the rush for land which takes place for some time previous to the introduction of the revised assessments only entailed the cultivation of very little (upwards of two-thirds of the whole), as the population of the district is by no means deficient, the average rate of assessment being above the means of the people, and the capabilities of the district is the only visible cause for so large a portion of the land having been waste for so long a series of years. We must in the natural course of things look for a decline in the manufactures as far as regards the coarser branches, and the inland position of the talooka renders the cost of exporting most kinds of its agricultural produce too expensive. Taking these circumstances into consideration, the necessity for a considerable reduction of the assessment must be allowed. The rates proposed for this talooka are as follows:—

Class.	Villages.	Distinguishing characteristics of the group.	Maximum Dry Crop Rate.
1ST—Rs. 1	23	Villages situated in the vicinity of the hills in the west of the talooka, having the best climate, and also conveniently situated with respect to market. ....	<i>Rs. a. p.</i> 1 0 0
2ND—As. 14	119	The remainder of the talooka to the east of the first class having a somewhat less favourable climate. ....	0 14 0

20. The garden-land of this talooka is not of much consequence ; it is found in fifty-two villages to the amount of 309 acres, bearing a survey assessment of Rs. 477. The old assessment is on an average at the rate of Rs. 2-5-0 per acre ; the new assessment gives an average rate of Rs. 1-8-8 per acre, the maximum rate in any case being Rs 2-12-0. These gardens are watered from wells, and are of a most inferior description ; the produce is confined to culinary vegetables, with occasionally a little sugarcane or a few plantain trees.

21. Rice-land is found in thirty villages to the extent in all of 454 acres, the average old rate on which was Rs.1-15-3. The present assessment amounts to Rs. 805-8-6, giving an average of Rs. 1-12-4 per acre. The great part of this rice-land is in the east of the talooka in the mahalkurree's division, and is watered by damming up the nullas and leading small watercourses from them. In the west of the talooka the rice-land is in small patches in the valleys among the hills, and is watered by small streams which flow for a great part of the year.

22. The assessment resulting from the above rates is compared with the old assessment on the land in cultivation in the year of settlement. In the following statement the acres on which both the old and the new averages have been made are those of the present survey. The average reduction is greater in the villages of the first class, in which poor, sandy soils prevail to a great extent, requiring a great expenditure of labour to insure a crop :—

Class.	No. of Villages.	Cultivated Acres according to New Survey.	According to Old Survey.		According to New Survey.								
			Assessment.	Rate per Acre.	Land in Cultivation.			Waste.			Total.		
					Acres.	Assessment.	Rate per Acre.	Acres.	Assessment.	Rate per Acre.	Acres.	Assessment.	Rate per Acre.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
				R. a. p.			R. a. p.			R. a. p.			R. a. p.
1st.	23	12,600	11,032	0 14 0	12,600	7,473	0 9 6	5,872	2,719	0 7 5	18,472	10,186	0 8 10
2nd	119	96,082	70,297	0 11 8	96,082	56,568	0 9 5	44,972	23,361	0 4 9	141,054	79,929	0 7 11
2	142	108,682	81,329	0 12 0	108,682	64,041	0 9 5	50,844	26,074	0 5 1	159,526	90,115	0 8 0

23. The new assessment as usual absorbs the direct levies of the district and village officers which were valued in the accounts as follows:—

		Rs.	a.	p.	Rs.	a.	p.
District officers ..	{ Dessae.....	375	12	0			
	{ Deshpandee .....	278	2	0			
	{ Nargowra.....	84	2	0			
	{ Chowdree.....	9	12	0			
		<hr/>			747	12	0
Village officers ..	{ Patels and naiks..	1,681	8	0			
	{ Koolkurnees.....	874	9	0			
		<hr/>			2,556	1	0
Total....		Rs. 3,303			13	0	

24. This valuation of the direct levies (huks) is much above their true value. Of the district officers the ryots asserted that they still paid huks to the deshpandee in one summut, and also to the chowdree, and a compensation, pending the permanent settlement, was awarded in these cases to the total amount of Rs. 36-8-0. In the case of the village officers where the huks were still levied a temporary compensation was awarded of Rs. 1,232-4-0; the compensation awarded was more liberal in cases where the other emoluments of the officers were entirely insufficient.

25. The joodee payable on all land held on that tenure has been lowered to the survey assessment in all cases where the old joodee exceeded the new assessment. This does not, however, apply to the mahal joodeedars, whose payments are not affected by the new settlement. Joodeedars also, according to custom, on relinquishing any entire survey fields were allowed a reduction on their entire payments equal to the survey assessment of such relinquished fields, which are at once entered as khalsat.

26. The general results of the whole settlement as regards all tenures are exhibited in the following statement, in which is shown both the result in the year of settlement and that in the succeeding year, that now current, compared with the average assessment of

the five years previous to the introduction of the new settlement. The decrease of gross revenue in the year of settlement is Rs. 16,253 or 20 per cent., and something more than this in the current year. But the capabilities of a district must not be judged by the cultivation and revenue in the years immediately preceding the revision of assessment, the approach of which is very prone to stimulate cultivation beyond its just limits. Taking the average collection of the whole years of our rule at Rs. 69,842, raised even as this average is by the increase of the last five years, the diminution of the gross revenue in the year of settlement amounts but to  $8\frac{1}{2}$  per cent. I have taken no notice in these comparisons of the remissions of the year of settlement (Rs. 5,897) as these are peculiar to that year, and arise from the old assessment only being collected in that year, when it is exceeded by the survey assessment, the difference being entered in the accounts as a remission. To set against the present sacrifice of revenue there is the possibility of a very considerable increase, the survey assessment on the whole Government land, cultivated and waste, amounting to Rs. 90,356, or Rs. 20,386 more than the average realisation of the whole period of our rule, and it is I think, taking all circumstances into consideration, probable that a large proportion of this possible increase of revenue will accrue to Government at no very distant period.\* In both the entries of cultivation and revenue for the current year it is true a falling off appears compared with the year of introduction of the new rates. This may, I think, be fairly attributed to the reaction which has been very generally found after a short lapse of time to follow the introduction of the revised rates occurring somewhat earlier than usual. The rush for land began at a period long before the obtainment of the revised rates than customary, and it is natural that the reaction should take place sooner also. Those who took up land on speculation, or to secure a selection, and have held it at a loss since 1845-46, now that the assessment of every field is known, have kept what they think will prove profitable and resigned the remainder :—

\* The revenue history of this district since the settlement up to 1862-63 may be seen in the appendix to this letter.



**STATEMENT showing the Cultivation, Assessment, Remissions, and Net Land Revenue for collection for 142 Villages composing the HOONGOOND TALOOKA under the Old and New Settlements.**

TENURE.	YEARS.	CULTIVATED LAND.				ARABLE WASTE.			Total Arable Acres.	Total Net Land Revenue for collection or Survey Assessment.
		Acres.	Assessment.	Remissions.	Balance for Collection.	Acres.	Assessment.	Net Produce of Grass Farms, Fruit Trees, &c.		
1	2	3	4	5	6	7	8	9	10	11
Government Land.	Average for last 31 years, from 1820-21 to 1850-51..	99,442	Rs. 80,625	Rs. 10,783	Rs. 69,842	57,215	..	1,221	150,657	71,063
	Last 5 years.	103,719	80,820	533	80,286	49,828	..	5,002	153,547	85,298
	1850-51	103,783	79,580	67	79,513	50,049	..	8,166	15,832	87,079
	1851-52	108,681	64,043	5,897	58,146	50,844	..	8,620	159,525	66,166
	1852-53	107,099	62,830	..	62,830	53,044	27,526	..	160,143	90,356
Joodee and Kuma- visse Joodee.	Average for last 31 years, from 1820-21 to 1850-51..	11,242	7,479	515	6,964	..	..	..	11,242	6,964
	Last 5 years.	11,241	9,518	2,136	7,382	..	..	..	11,241	7,382
	1850-51	11,260	10,903	3,557	7,346	..	..	..	11,260	7,346
	1851-52	30,942	7,040	6	7,034	..	..	..	30,942	7,034
	1852-53	30,412	7,076	..	7,076	..	..	..	30,412	7,076
Surru Enam and Mahal Joodee.	Average for last 31 years, from 1820-21 to 1850-51..	68,295	8,683	..	8,683	..	..	..	68,295	8,683
	Last 5 years.	67,830	10,967	..	10,967	..	..	..	67,830	10,967
	1850-51	67,561	10,932	..	10,932	..	..	..	67,561	10,932
	1851-52	49,546	10,067	..	10,067	..	..	..	49,546	10,067
	1852-53	49,533	10,067	..	10,067	..	..	..	49,533	10,067
Total Arable Land on all Tenures.	Average for last 31 years, from 1820-21 to 1850-51..	178,979	96,787	11,298	85,489	57,215	..	1,221	236,194	86,710
	Last 5 years.	182,790	101,314	2,669	98,645	49,828	..	502	232,618	103,647
	1850-51	182,604	101,415	3,624	97,791	50,049	..	8,166	232,653	103,957
	1851-52	189,109	81,150	5,903	75,247	50,844	..	8,020	240,013	83,267
	1852-53	187,044	79,973	..	79,973	53,044	27,520	..	240,088	107,409

1. The averages of past years entered in this statement are for the twenty-five years immediately preceding the revised settlement as regards the acres, and for thirty years as regards the rupees in the case of 136 villages. In the case of the remaining villages the averages are, as regards both acres and rupees, deduced from the returns of twelve years in the case of one village, on those of five years for three villages; for two villages the returns of a single year only were available.

2. The three first lines in each division of the statement refer to the old settlement; the two last, viz. for the years 1851-52 and 1852-53, to the new.

3. The rupees in the last column of this statement opposite the year 1852-53 form the survey kumal on total assessment capable of realisation from the whole land held on the several tenures, while for the preceding years the rupees in this column represent the net land revenue for collection.

27. The decrease under the head of surwu enam and increase under joodee enam in the 3rd column of the statement opposite the years 1851-52 and 1852-53 is due to the transfer from the former to the latter head of the lands entered as surwu enam, but belonging to the wuttuns of joodeedars, the joodee being considered as due on the surwu and joodee enam together.

28. The entire area of the one hundred and forty-two villages under report (arable and unarable, Government and alienated) together with the assessment on each is exhibited in the following statement :—

Description of Land.	Area in Acres.	Full Survey Assessment.	Deduct portion of Assessment alienated.	Balance of Assessment realisable.
		Rs.	Rs.	Rs.
Unarable .....	38,228	....	....	....
Arable Government land .....	160,143	90,356	....	90,356
Arable joodee enam .....	30,412	18,224	11,148	7,076
Arable surwu enam and mahal joodee .....	49,533	27,825	17,558	10,067
Total area and assessment ....	278,316	1,36,405	28,906	1,07,499

29. After the measurement of villages had been completed, and previous to the introduction of the rates, grants of land in service enam had been made to newly-appointed shetsundees and to those whose emoluments were considered insufficient. These grants were made according to the old numbers, several of which are frequently included in one revenue survey number. The consequence was that considerable difficulty occurred at the jumabundee from one part of a revenue survey number being service enam and the remainder Government land, sometimes cultivated and sometimes waste. When the shetsundee himself cultivated the remainder of the number no difficulty would be found. When it was waste and the shetsundee refused to cultivate the difficulty became insuperable, and the only course was to re-enter the service enam as khalsat, and insist on the relinquishment of the whole number under rule 12 of the joint report rules. When a ryot already cultivated the remainder of the number or was willing to cultivate it, the case was little improved,

as he might relinquish his share any year, and all the evils attendant on the existence of Government waste and enam land within the same boundaries would occur. I remarked in many cases that there was an unwillingness on the part of the ryots to cultivate in the same number with shetsundees even when some demand existed for land in a village. This probably arose from a fear of experiencing annoyance from them under cover of the performance of their police duties. A large number of supplementary grants of land in service enam had been made by the district authorities and confirmed by the Collector,\* Mr. Reeves, in the previous year. A still larger number of assignments had been made by the mamlutdar in the course of the previous year and awaited confirmation. Wherever these grants were in opposition to the spirit of the survey rules, that is where the shetsundee himself did not cultivate the remaining khalsat portion of the number as a Government ryot, I re-entered the whole as khalsat, and remitted the assessment of the portion proposed to have been entered as service enam in proportion to the time during which service had been done. The mamlutdar informed me that where assignments were ordered and no waste land existed in the village, a ryot was induced to relinquish land by persuasion (sumjhoot), and though it is hard to believe that at the present day any ryot would tamely submit to be deprived of his land, yet beyond a doubt the wish to propitiate or fear of incurring the displeasure of the village and native district authorities would induce many of the less independent ryots to do what they would not do of their own free-will, and though written resignations are always required, careful inquiries on this point have induced me to believe that these resignations are not in all cases entirely voluntary.

30. The whole of the above assignments were made according to the valuation derived from the old unequal rates, and I have been informed by the Police Superintendent that they will be revised and adjusted according to the new rates. I should imagine it will prove a most difficult thing to effect a settlement in accordance with existing rules; and without compelling a shetsundee to cultivate

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\* The whole of the Mamlutdar's arrangements, so far as portions of fields are concerned, have been disallowed by the present Collector.

land that he does not require, to prevent Government land lying waste in a number, part of which has been granted as payment for service, and all these difficulties might be avoided by the adoption of cash payments, wholly or at any rate in cases where the shetsundee preferred this mode of remuneration, or where paying in land proved inconvenient. Payments in land is a mere device of native governments, with whom land was cheaper than money. It would be a very great mistake to suppose that payment in this manner has any great charm for the people, particularly under the system proposed to be adopted, which is very possibly but a reversion to the original system of paying for service in land, namely, entering the new shetsundee land not as enam but as khalsat, and remitting the assessment thereon year by year. By this means the shetsundee has no longer the dignity of a wuttundar, but becomes a mere stipendiary, and his becoming such was one of the great objections raised by those opposed to cash payments. Direct payment in money would be but a step further, and this would by no means deprive any one of the land he now holds, as appears to have been feared. If such was his pleasure he would continue to cultivate as a Government ryot, and so far from payment in money entailing a loss on the State, the contrary would, I feel certain, prove to be the case. In the surveyed districts there is no want of demand for all but inferior lands, and if the option was given to shetsundeeds of taking Rs. 18 a year in land or Rs. 16 in money, a large proportion would choose the diminished payment in money.

31. The remarkable scarcity of carts in the Hoongoond talooka has been adverted to in the 5th paragraph. The talooka itself is, with the exception of the western parts, generally of a very even surface, and well calculated for the use of carts, both for agricultural purposes and for the transport of produce. The rugged country on the west in the talookas of Badamee and Bagulkote coming between Hoongoond and the coast may be the true cause of the small number of carts. Much will probably be done to increase the exports by the construction of the road, which is, I believe, sanctioned, connecting Hoongoond with the Belgaum and Kulladghee road at Bagulkote. This will give a communication with the coast open to carts the whole distance, and the cost of transporting bulky articles (grain, &c.) will be greatly decreased.

32. But it is not alone with Belgaum and the ports beyond that a remunerative export-trade with the Hoongoond and adjacent talookas could be carried on. One of the best markets for inferior description of cotton manufactures and for grain might be found in the densely-populated Goa territories. In fact a very considerable export-trade is carried on at present in these articles under great disadvantages with that territory, and were facilities of access increased the trade might doubtless be much increased. To this the construction of a cleared road from Nundighur to Kittoor, and thence to Beteegerree in the Dharwar talooka (a total distance nearly east and west of about thirty-two miles), is a great step. At Beteegerree the even, black plain begins, and from this to Jaleehal in the Badamee talooka (fifty-five miles) carts can travel with ease during at least nine months of the year. The clearing of the road from Jaleehal through the hills to Goodoor in the Hoongoond talooka would complete the communication with Nundighur, which is a very large town, and of most important trade, both in Concan produce and in the products of the plain-country. From Nundighur to the Tulleewaddee ghaut is about eighteen miles. The first fourteen miles of this distance is through a country presenting no great obstacles to the construction of a road. Carts can pass now, but in occasional places with difficulty. The last four miles from Hehmargee to the top of the ghaut contain some bad pieces, but not such as would require any great expense to overcome them. The whole ghaut is in our territory, which extends for about a mite below into the Concan. The descent of the ghaut, which I have lately visited, is in general very easy indeed, though quite unimproved by art. A trifling sum of fifty or sixty rupees is expended yearly from the customs department in repairing portions of the track cut away by the rains. The extension of the made-road from Nundighur to Tulleewaddee would give a very considerable impulse to traffic with the eastern or plain districts of Belgaum and Dharwar collectorates—the Hoongoond, Badamee, Bagulkote, Nowlgoond, and Dumbul talookas.\* As no roads exist in the Goa territories for wheeled carriages, it would be an useless expense to make a regular

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\* The opening a line of made-road from the plain-country above the ghauts to Goa *via* Dharwar and the Tinaee ghaut, ten miles south of Tulleewaddee, was sanctioned in 1860, and will, it is expected, be completed in 1864.

road down the ghaut, but a yearly grant of a few hundred rupees might be very advantageously applied in improving the track and keeping it in a good state for bullock traffic.

33. Another measure tending greatly to increase the trade with the Goa territories would be the abolition of the existing duties on the export of produce and manufactures from the British dominions into Goa by land. On both descriptions of exports an *ad-valorem* duty of three per cent. is levied at the various ghauts. The people of Goa consume to a considerable extent the common cotton fabrics manufactured at various places in our territories. This is the very trade which has suffered to such an extent by competition with European manufactures. Laying a tax on the exportation of grain also appears hardly less injurious to the interests of this country. The import duties levied by the Goa authorities I was unable to ascertain, as just now, owing to the insurrection in Goa, all traffic is stopped, but it was alleged to be very much heavier than that levied by us. It is possible that by the relinquishment of export duties on our part a reduction of the import duties might be obtained from the Goa government, who would be remunerated by increased imports; thus the gain to our manufacturers and producers would be largely augmented.

34. The very unsettled state of the country within the Nizam's dominions, which form so large a part of the boundary of the Hoongoond talooka, must tend to produce an unfavourable impression on the minds of the inhabitants of our adjoining territory. Great disorders and loss of life are of frequent occurrence, and the credit of permitting, or of not preventing, this state of affairs attaches in their minds to us. At any rate they either suppose us, if not unwilling, unable to effect a remedy; and the injury to our prestige is not confined to the moral impression induced by our sufferance of such a state of affairs in the territories of what they consider to be a dependent state, but they see us unable to procure restitution for our own subjects when plundered. In June 1850 forty-five head of cattle and seven hundred goats, belonging to inhabitants of Somlapoor in the Hoongoond talooka, were forcibly carried away at noonday while grazing on the lands of that village by twenty-five horsemen and one hundred and twenty-five footmen, who, after ill-treating and depriving the herdsmen of their clothes, drove off the whole to Moodgul—a large town in the Nizam's

territory. The whole property carried off belonged to sixteen individuals, to the total value of Rs. 1,387. On the 30th of July 1850,\* by direction of the Most Noble the Governor General, the Resident at Hyderabad was instructed to inform the Nizam's minister "that full reparation should be made to the owners of the cattle, and reparation in money to those who were ill-treated; and further that his Lordship will permit no delay whatever to be made in complying with this demand." Close on three years have now elapsed from that date, and up to the present time no reparation or restitution whatever has been made. The subjects of our Government have a right to look for protection from it; and if our power or influence is insufficient to obtain restitution in a flagrant case like this, in justice we are bound to ourselves to reimburse those plundered, or allow them to retaliate on their plunderers.

35. I will now advert to that portion of the Uthnee talooka in which the revised rates were introduced at the settlement for 1851-52, namely, in fifty-three villages, in which alone the measurement and classification were in a sufficiently advanced state to admit of the preparation of the necessary papers in time for the jumma bundee.

36. The Uthnee talooka, of which a map accompanies this report, is entirely composed of the estates of various jagheerdars, which have from time to time lapsed to Government, commencing with forty-two villages of the Neepanee dessaee's estate, which fell in 1839. The main body of the talooka constitutes the most northern part of the Belgaum collectorate. There is also a detached mass of about a dozen villages situated along the banks of the Krishna, and abutting on the western boundary of the Bagulkote talooka. To the west and north-west of the main body of the talooka are several detached villages, but none of these are included in the fifty-three now under report.

37. Of these fifty-three villages sixteen are comprised in the Gulgulle mahalkurree's division, which includes the whole of the group of villages bordering on the Bagulkote talooka, together with several others along the bank of the river in the direction of the main body of the talooka. The remaining thirty-seven villages are under the mamlutdar, who is stationed at Uthnee, in whose charge is also the

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\* Sir H. Elliott's letter to Resident at Hyderabad, No. 1425, dated 30th July 1850.

residue of the talooka, comprising twenty villages, which are not referred to in this report. The names of the pergunnas or ancient divisions with the number of villages included in each are exhibited in the following statement:—

Present Division.	Name of Pergunna or old Division to which the Villages belong.	Belonging to Government.			Enam Villages.				Grand Total of Government and Alienated Villages.
		Villages.	Bazars.	Total.	Jondes or subject to Quit-rent.	Surwu Enam, or Rent-free.	Jagheer.	Total.	
Uthnee Mamludar's.	Uthnee .....	5	3	8	5	28	..	33	41
	Kokutnoor .....	9	..	9	..	..	..	..	9
	Aeenapoor .....	7	..	7	..	..	..	..	7
	Honwad .....	16	..	16	..	..	..	..	16
	Total....	37	3	40	5	28	..	33	73
Gulgullee Mahalkurree's.	Gulgullee .....	14	..	14	1	1	..	2	16
	Bunwurree .....	2	..	2	..	..	..	..	2
	Total....	16	..	16	1	1	..	2	18
Grand Total....		53	3	56	6	29	..	35	91

38. As this talooka occupies an intermediate position between the districts to the south, where the Canarese, and those to the north, where the Marathi language is in general use, we find here both the languages pretty commonly spoken. In the west and north of the talooka Marathi prevails. In the eastern villages, in the direction of Beejapoor, Canarese appears to be almost exclusively the language of the people. In fact both as regards the physical appearance of the country and the prevalent Maratha population, the Uthnee talooka rather forms a portion of the true Maratha country to the north than of the Canarese province denominated the Southern Maratha Country, in which it is politically included.

39. The surface rock of the Uthnee talooka is trap, and the general aspect of the country presents the characteristic appearance of districts where this rock prevails. In the west of the talooka the dis-



tant horizon is broken at intervals by bare, flat-topped hills, rising from the plain in a succession of sharply-defined artificial-looking terraces, the outline of which is unbroken by trees or bushes, and when caught by the rays of the sun stand out at a great distance with extraordinary distinctness. The plainer country is generally composed of a series of long undulations, between which in the hollows will be frequently found a small stream of running water fringed on each side with a few hundred paces of soil of a fair and often of a superior quality. On ascending the swell the soil diminishes both in quantity and quality, the higher situations being generally sterile and stony, the rock being covered by an inch or two of soil, which is difficult to distinguish from the rock itself, and supports the scantiest vegetation. In many places for hundreds of yards together the bare rock may be seen exposed without the slightest covering of soil. Interspersed with country of the nature above described will be found tracts, more or less extensive, of black soil, which is, however, of most uncertain depth, the undulating trap-rock being in one place some feet, and at the distance of a few yards, but some inches from the surface. The river Krishna invariably runs through a valley of deep alluvial soil of width varying from a few hundred yards to some miles.

40. The banks of the river are in general very well wooded, babul being the prevailing species of tree. In the islands in the bed of the river and in the kooruns or grazing grounds on its banks are extensive tracts thickly covered with this description of tree. The remainder of the talooka, with the exception of about the sites of some of the villages, is devoid of trees of any description.

41. The eastern and western villages of the main body of the talooka are divided by a tract of hilly country, some two or three miles wide, immediately to the east of the town of Uthnee. The villages to the east of this tract have the worst climate of the whole talooka, a failure of crops to a great or less degree from deficiency of rain being the rule instead of the exception. In this tract the people seem miserably poor, and the agriculture worse than I have seen elsewhere in the Southern Maratha Country. In the villages about Gulgullee, and in those to the west of the hilly tract above-mentioned, the climate is somewhat better, but still very uncertain. Except in some of the Gulgullee villages, the use of manure appears to be almost

unknown. The villages along the Krishna seem to be in general better off than their neighbours. In these villages is always a certain proportion of very superior soil which is overflowed yearly by the river. This fertilizes the soil to an extraordinary degree, and enables it to produce large crops of superior quality without the aid of manure. These villages are thus to some extent rendered independent of the local fall of rain.

42. With the exception of those on the bank of the river, the villages of this talooka are separated from one another by great distances, particularly in the north-eastern part, where a distance of five or six miles commonly intervenes between one village and another. The fifty-three villages under report contain an area of 524 square miles, and a population of 48,478 souls, or within a fraction of 92 per square mile. When it is borne in mind that in the villages on the bank of the river and in the Gulgullee mahal the average population is much greater than the above number, it will be understood how very scanty the population is in the more thinly-inhabited tracts in the north and north-east of the talooka, in which the fact of a large portion of the sites of many villages being covered with ruins of ancient date indicates the existence of a much larger population at some distant period of time.

43. There are no manufactures of consequence in the Uthnee talooka. In the town of Uthnee itself are about 400 souls, supported by weaving coarse cotton-cloth, and about the same number scattered throughout the other villages. There are also in the villages under report about 500 souls, supported by the fabrication of kumlees—the common black blanket worn by nearly all the poorer classes of natives. The cloth and kumlees entirely enters into the home consumption of this talooka.

44. The chief bazar is that held at Uthnee itself, which is indeed the only one of consequence within the district. It is attended by the people of the neighbouring villages and by traders from the minor bazars within the district—Honwar, Telsung, Aenapoor. From the Uthnee bazar there is a small export of the products of the district (cotton and grain) to the large bazar held at Meeruj, and an import thence of the products of the Concan. The people of the villages to the south of Uthnee frequent also the bazar held at the large

manufacturing town of Rubkuvée in the adjoining Sanglee jagheer. The people of the mahalkurree's division have the small bazar held at Gulgullee itself, and also within a convenient distance the large markets of the jagheer towns of Moodhol and Jumkhundee. Thus it will be seen that the people of the villages around Gulgullee and those about, and particularly to the west and south of the town of Uthnee, have an advantage over the north-eastern villages with respect to markets.

45. The fifty-three villages under report contain 284,300 acres of arable land and 51,154 acres of unarable—in all 335,454 acres.

46. The measurement was commenced in 1848-49 under the superintendence of Lieutenant Kemball, and completed in the three following seasons under the superintendence of Mr. W. H. Bell and Mr. Mitchell. The classification was commenced in 1850-51 by Lieutenant Kemball and completed by him and Mr. Mitchell in the following season. The accuracy with which both operations were conducted, as exhibited by the result of the test, is shown in the following statements :—

Government Villages.					Nature, Extent, and Result of Test.											
Number.	Fields.	Arable Acres.	Nature of operation.	Total number of Villages tested.	By European Officers.				By Natives.				Total Test.			
					Fields.	Acres.	Average Error.		Fields.	Acres.	Average Error.		Fields.	Acres.	Average Error.	
							Per Cent.	Per Field.			Per cent.	Per field.			Per cent.	Per Field.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
53	14,671	284,300	Measurement.	48	992	22,570	Goontas 37½	Pies. ....	43	978	32½	..	1,035	23,548	Goontas 37	Pies. ..
53	14,671	284,300	Classification.	52	783	14,359	..	8	..	..	..	..	78	14,359	..	8

Total No. of Fields tested.	Number of Fields in which the difference between Original and Test Measurement did not exceed—											
	1	2	3	4	5	6	7	8	9	10	11	12
	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.
1035	613	345	56	15	3	2	..	1	..	..	..	..

	Number of Fields in which the difference between Original and Test Classification was—									
	Nothing.	Rs. a. p. 0 0 1 to 0 0 6	Rs. a. p. 0 0 7 to 0 1 0	Rs. a. p. 0 1 1 to 0 1 6	Rs. a. p. 0 1 7 to 0 2 0	Rs. a. p. 0 2 1 to 0 2 6	Rs. a. p. 0 2 7 to 0 3 0	Rs. a. p. 0 3 1 to 0 3 6	Rs. a. p. 0 3 7 to 0 4 2	
781	40	309	235	116	62	12	4	..	3*	

47. This talooka has changed masters oftener than other parts of the Southern Maratha Country, first forming part of the kingdom of Annagoondee. On the fall of this state it came into the hands of the kings of Beejapoor, towards the close of whose rule it was frequently overrun and devastated by the contending forces of the kings and of the newly-risen Marathi power; it then fell into the hands of the emperors and remained under their rule for upwards of thirty years, when it came under the vice-regal authority of the Nizam, under whom it remained for about five years, and then appears to have been for a short time in the hands of the Kolapoor branch of the Marathas, by whom it was made over by treaty to the Sattara branch in 1730. From the fall of Beejapoor in 1686 up to this date the Uthnee talooka and neighbouring country appears to have been in a most unsettled state—no security for life or property existed. Under the Sattara branch, from about A.D. 1730 to 1749, much was done to improve the country: land was given out on leases at a nominal rent, population and cultivation increased, and greater security prevailed. In 1750 the Sattara branch was supplanted by the Peshwa, under whom this district was made over to various jagheer-

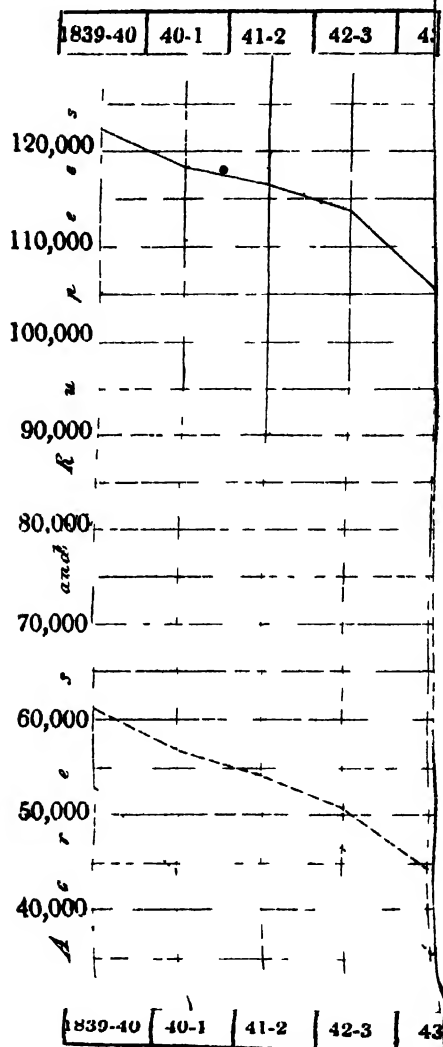
\* The cause of the large errors is explained in Captain Wingate's letter to Government, No. 274, dated 17th August 1852, paragraphs 9 to 11.

dars, and a fair degree of prosperity existed till about A.D. 1790. In 1792 occurred a great famine which almost depopulated the country. After this, in the latter days of the Peshwa's rule, times of trouble again came, which, together with the farming system then introduced, undid what had been gained in the preceding fifty years. On the fall of the Peshwa this talooka was for two years under the British government, and was then made over in jagheer to Appa Dessae of Neepance, whose management is the subject of no agreeable recollections on the part of the people. On his death in 1839 it finally lapsed to the British government. The present impoverished state of the Uthnee talooka is doubtless in some degree due to the constant change of rulers and the adversity gone through in the last and earlier part of the present century.

48. Under our Government the land measures and rates obtaining under the Neepaneckur were for want of others continued in-use. The assessment on the superior description of land was in general very high. Under the native system, though the assessment is nominally fixed, it is in practice anything but so. A bargain is made with the ryot from year to year, and he either gets his land at a rate lower than the standard rate, which reduction is known under the name of 'khund tota,' or if possible he is induced to engage at the standard, receiving as a makeweight a tract of poor land rent-free or at a nominal assessment. A large uncollectable balance is also allowed to remain outstanding from year to year, advantage being taken of any very favourable season to collect as much as possible. The threat of enforcing his claim on this outstanding balance is used by the jagheerdar to compel the ryot to continue to cultivate. The jagheerdar always having a large margin on his side, limits his demands alone by the capacity of the ryot to meet them, and the ryot's capacity is measured alone by the conscience of the jagheerdar. In some jagheers they are ground down to their last rupee, and in others, where a more liberal policy prevails, enjoy considerable ease. A minute knowledge of the means of every cultivator is the basis of the native system, under which the revenue of a district may be raised to an amount otherwise unattainable, and yet without actually ruining a single ryot. The acquisition of capital is, however, impossible—there is no incentive to exertion, and progress of any kind is not to be looked for.



# DIAGRAM illustrations in the case of the Government Aral



The various items are measured by the *broken* line the Assessment, and the *dotted* line crosses the perpendicular for each year. The *solid* line each year. According as the *broken* or *dotted* line the perpendicular, exceeded or fell short of one of the

49. It is very evident that our strict and unbending system of revenue management, which looks more to what is actually due by the cultivator according to previous agreement than to what he is able to pay, is very ill-adapted to a fast and loose system of assessment like the native, and the ryots must either find some indirect expedient to lower the average rate of payment or submit to be ruined. In the present case, since we have possessed this talooka a large quantity of the best land, which bore the highest proportionate rate of assessment, has been allowed to fall waste, in many cases the ryots retaining alone the poor land given at a nominal rate under the former government. The following table, which refers to the villages included in the diagram mentioned in the next paragraph, will at once make this evident :—

Years.	Cultivation Acres.	Gross Assessment.	Average Rate per Acre.		
		<i>Rs.</i>	<i>Rs.</i>	<i>a.</i>	<i>p.</i>
1839-40	121,930	61,108	0	8	0
1842-43	113,599	50,406	0	7	1
1845-46	100,307	40,030	0	6	5
1849-50	97,468	36,015	0	5	11
1850-51	92,369	37,419	0	6	6

50. It appears thus that in ten years superior and highly-assessed land had been thrown up, until the average rate of assessment on the whole land in cultivation was reduced from 8 annas to 5 annas 11 pies, or upwards of one-fourth. The increase in the average rate of assessment, accompanied by a decrease in cultivation in the last year 1850-51, is solely due to the near approach of the revised assessment, which induced the ryots to relinquish lowly-assessed inferior fields and regain possession of highly-assessed fields, which necessity had formerly compelled them to give up. The slight effect which the approach of the revised assessment had on the revenue of this district compared with what has been usual in other districts indicates in no slight degree the poverty-stricken condition of the people.

51. Complete accounts have been obtained for all the villages from the date of their lapse. The diagram on the opposite page has been prepared for forty-two of the fifty-three villages under report in



the usual form. The remaining eleven villages are excluded as they lapsed to Government at various periods subsequently. They are, however, separately shown in the figured statement in the appendix marked C under the years in which they respectively fell. The acres of cultivation in each year have been deduced from the old land measures, the value of which in acres has been approximately ascertained from the proportion existing between the area of each village in acres according to the present survey and its area by the old land measures. The acres of cultivation obtained through this process are probably not very far wrong—at any rate the relative proportion of the cultivation of the different years are correct.

52. On an inspection of the diagram it appears that for the first three years of our rule the remissions granted were large, and the decline of cultivation though steady is not very great. In 1842-43 the difference between the gross and net assessment is suddenly much reduced, remissions to a much smaller extent than in the three previous years being given; this at once induced in the next year 1843-44 a declension of cultivation at an increased speed; large remissions again in that and the following year in some measure checked the decrease, and the cultivation increased in the years 1846-47 and 1847-48 very nearly up to where it had been in 1842. This, however, under the existing assessment could not be sustained, and from 1847-48 to 1849-50 the decrease was more rapid than ever. The decrease in 1850-51 is attributable to a different cause, alluded to at the close of the last paragraph. The result of our possession of this district is that, as far as relates to the villages in the diagram, the acres under cultivation when we got the district (121,930 acres) had diminished in ten years to 97,468 acres (the cultivation of 1849-50), and the realised revenue in the same ten years had fallen from Rs. 52,573 to Rs. 34,510.

53. From the above it is clear that a reduction of assessment now proposed is very urgently called for in the Uthnee talooka. The fifty-three villages under report have been divided into two classes, with respective maximum dry-crop rates of assessment of 14 and 12 annas per acre, according to the following statement:—

Class.	Villages.	Distinguishing characteristics of the group.	Maximum Dry Crop Rate.
			<i>Rs. a. p.</i>
1ST. Maximum rate As. 14.	23	Comprising 14 villages immediately about Gulgullee and 9 villages which are to the west of the hilly tract alluded to in paragraph 41. ....	0 14 0
2ND. Maximum rate As. 12.	30	The remaining villages, situated to the eastward of the above-mentioned hilly tract, having an inferior climate, and less favourably situated with regard to markets. ....	0 12 0

54. There are 853 acres of garden-land in the villages under report. One-fourth of this amount is in the town of Uthnee alone, and nearly the whole of the remainder in the villages in the eastern part of the talooka. Sugarcane and plantains are grown in many gardens, but in rare instances to any extent. The prevalent want of capital on the part of the cultivators prevents them from growing the superior description of crops to as great a degree as they might. Culinary vegetables and wheat and other descriptions of grain form the bulk of the crops grown. The gardens are generally watered from dug wells; in many instances from boorkees erected on the banks of nullas. The old average rate on the whole garden-land is Rs. 1-5-4 per acre; the new assessment gives an average rate of Rs. 1-4-3 per acre, the maximum assessment being Rs. 1-12-0.

55. The assessment derived from the above described rates is contrasted with the assessment, according to the old rates, on the land in cultivation in the year of settlement. In the following statement the acres on which both the old and new average rates have been calculated, are those ascertained by the present survey:—

Class.	No. of Villages.	Cultivated Acres according to Survey.	According to Old Rates.		According to Survey.								
			Assessment.	Rate per Acre.	Land in Cultivation.			Waste.			Total.		
					Acres.	Assessment.	Rate per Acre.	Acres.	Assessment.	Rate per Acre.	Acres.	Assessment.	Rate per Acre.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
				Rs.a.p.			Rs.a.p.			Rs.a.p.			Rs.a.p.
1st.	29	38,464	26,799	0 11 1	38,464	10,448	0 8 1	25,102	10,097	0 7 9	63,656	30,085	0 7 7
2nd	30	78,530	35,855	0 7 1	78,530	27,886	0 5 8	62,549	16,286	0 4 2	141,079	44,172	0 5 1
2	53	116,904	72,624	0 8 6	116,904	47,334	0 6 6	87,741	22,023	0 4 2	204,735	70,257	0 5 6

56. The new assessment as usual absorbs all direct levies on the part of the village and district officers. These levies are stated in the old accounts as follows :—

	<i>Rs.</i>	<i>a.</i>	<i>p.</i>	<i>Rs.</i>	<i>a.</i>	<i>p.</i>
District officers { Dessaee.....				.....		
Deshpandee ....				.....		
Nargowra.....	3	8	0			
				3	8	0
Village officers { Patels and naiks.	2,894	0	4			
Koolkurnees....	4,065	2	4			
				6,959	2	8
Total....	Rs.	6,962	10	8		

In the case of village officers, to whom alone direct levies were still paid, compensation was awarded pending the final settlement to a total amount of Rs. 1,435. The amount claimed was as usual in all cases far above the actual value of the huks, and in many cases absurdly so. The amount of compensation awarded varied according to the sufficiency of the other emoluments, which were, however, in this talooka generally most ample.

57. The general result of the settlement in the fifty-three villages under report is shown in the statement on the following page. It will be seen that in 1850-51 (the year immediately preceding the introduction of the revised rates) the cultivation was considerably below, while the gross revenue fell but little short of the average from 1845-46 to 1850-51, the last five years of the old rates. The cause of this has been explained in the beginning of paragraph 50. In the year of settlement 1851-52 the cultivated acres amounted to 116,994, and the survey gross assessment thereon to Rs. 47,334, out of which was remitted Rs. 9,554. These large remissions are solely due to the old rates only being collected in the year of settlement, when it is exceeded by the new rate. The large amount of these remissions afford a remarkable proof of the great inequality of the old assessment. In the current year 1852-53 the cultivation has increased to 124,648 acres, bearing according to the revised rates an assessment of Rs. 54,419, the whole of which will in all probability be realized, equalling within a small sum the gross assessment of the land in cultivation the last year of the old system and the sum actually realized on an average during the preceding five years. This amount of cultivation in 1852-53 is, however, in some small degree swollen by the cultivated land of the relinquished joodee and kumavisee joodee which was entered as khalsat at the settlement. There are still remaining 83,734 acres of Government arable land lying waste, bearing an assessment of Rs. 21,359. It is hardly to be anticipated that the whole of this will ever become cultivated, much being land of a very inferior quality. I do not expect that for some years to come there will be any material increase to the cultivation or revenue, and indeed for the welfare of the district it is not desirable that there should be for a time. Every cultivator has probably gone as far as his means would allow in securing the fields he particularly desired, and for some time to come his whole energies will be taxed to bring them into a proper state of cultivation. In the meantime Government by the introduction of the revised settlement is not the loser in a pecuniary point; and the future welfare of the district may be considered secured: as the means of the people increase and capital accumulates, doubtless a large proportion of the waste will come into cultivation and benefit the revenue in proportion.\*

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\* In the appendix of this letter the revenue history of the district since 1852-53 is given.

**STATEMENT Showing the Cultivation, Assessment, Remissions, and Net Land Revenue for collection for 53 Villages composing part of the UTHNER TALOOKA under the Old and New Settlements.**

TENURE.	YEARS.	CULTIVATED LAND.				ARABLE WASTE.			Total Arable Acres.	Total Net Revenue for collection or Survey Assessment.
		Acres.	Assessment.	Remissions.	Balance for Collection.	Acres.	Assessment.	Net Produce of Grass Farms, Fruit Trees, &c.		
1	2	3	4	5	6	7	8	9	10	11
Government Land.	Average for 12 years from 1839 to 1850		Rs.	Rs.	Rs.		Rs.	Rs.		Rs.
	1839 to 1850	125,811	66,244	7,625	58,619	61,539	..	2,554	187,350	61,173
	Last 5 years.	121,090	50,906	3,941	55,965	71,716	..	3,238	192,806	59,293
	1850-51 ..	108,238	55,274	..	55,274	85,408	..	3,585	193,699	58,859
	1851-52 ..	116,094	47,334	9,554	37,780	87,741	..	9,480	204,735	47,200
	1852-53 ..	121,648	54,419	..	54,419	83,734	21,359	..	208,382	75,778
Jodee and Kumavisee Jodee.	Average for 12 years from 1839 to 1850									
	1839 to 1850	31,318	11,892	955	10,937	..	..	..	31,318	10,937
	Last 5 years	30,794	11,041	1,063	10,578	..	..	..	30,794	10,578
	1850-51 ..	30,816	11,340	..	11,340	..	..	..	30,816	11,340
	1851-52 ..	30,617	9,923	91	9,832	..	..	..	30,617	9,832
	1852-53 ..	27,783	9,214	..	9,214	..	..	..	27,783	9,214
Surru Enam and Mahal Jodee.	Average for 12 years from 1839 to 1850									
	1839 to 1850	61,392	7,015	..	7,015	..	..	..	61,392	7,015
	Last 5 years.	59,935	5,775	..	5,775	..	..	..	59,935	5,775
	1850-51 ..	59,695	5,774	..	5,774	..	..	..	59,695	5,774
	1851-52 ..	48,952	5,544	..	5,544	..	..	..	48,952	5,544
	1852-53 ..	48,134	5,544	..	5,544	..	..	..	48,134	5,544
Total Arable Land on all Tenures.	Average for 12 years from 1839 to 1850									
	1839 to 1850	218,521	85,151	8,580	76,571	61,539	..	2,554	280,060	79,125
	Last 5 years.	211,819	77,322	5,004	72,318	71,716	..	3,238	283,535	75,556
	1850-51 ..	190,099	72,388	..	72,388	85,408	..	3,585	284,207	75,973
	1851-52 ..	196,563	62,801	9,645	53,156	87,741	..	9,480	284,304	62,636
	1852-53 ..	200,565	60,178	..	60,178	83,734	21,359	..	284,300	90,537

The averages of past years entered in this statement are for the twelve years immediately preceding the revised settlement as regards the acres and rupees.

2. The three first lines in each division of the statement refer to the old settlement; the two last, viz. for the years 1851-52 and 1852-53, to the revised settlement.

3. The averages entered in this statement are for the whole twelve years in the case of forty-two villages, nine years for four villages, seven years for five villages, and six years for one village.

4. The rupees entered in the last column of the statement opposite the year 1852-53, form the new survey kumal or total assessment capable of realization from the whole land held on the several tenures, while for the preceding years the rupees entered in this column represent the net land revenue for collection.

58. As described with reference to Hoongoond, jodeedars on relinquishing any entire survey numbers of their wuttums were allowed a reduction of their total jodee payments equal to the survey assessment of the relinquished numbers. There was also in this talooka a great deal of kumavisee jodee or land originally held on the jodee tenure, the holders of which had either actually resigned it, or having neglected to pay their jodee for many years, their land had fallen into the hands of Government; the whole of this was at the survey settlement entered as khalsat. In the 3rd column of the statement the head of surwa enam is considerably less in 1851-52 than in the previous year, which is due to the extent of 1,582 acres to the transfer of the surwa enam lands of jodee enamdars to the head of jodee enam, in which head a corresponding increase is not observed owing to the great decrease caused by resignations and entering of kumavisee jodee as khalsat before adverted to. As the lapses have been insignificant, the remaining difference between the entries under the head of surwa enam in 1851-52 and the previous year is almost entirely caused by the acres in 1851-52 and preceding years having been approximately obtained from the old land measures in the manner described in paragraph 51, and on examination I find that in many cases the acres of surwa enam, ascertained to exist by the survey, bear a smaller proportion to the total survey area of the village than would be expected from the proportion obtaining between the surwa enam according to the old land measures and the total area of the village in the same measures. This disproportion I observed to exist principally in villages containing a large amount of land of very low quality; and as the old land measures are believed to have been measures of value rather than of area, and as the enam lands would very naturally be of a quality superior to that of the average of the land of the whole village, the average area of a unit of the old land measure in enam land would fall short of the area of the same unit derived from an average of the whole land of the village.

59. The roads in this talooka are in general pretty good, the prevailing even surface of the country offering no serious obstruction to traffic in the present impoverished state of the district; as the exports are of trifling amount, the want of better roads is not materially felt. As production increases, the construction of the road proposed

from Meeruj east and west through the talooka to Beejapoor will greatly facilitate the transport of produce to the coast *via* Kolapoor and the Phonda Ghaut.

60. A statement of the whole area of the fifty-three villages under report (arable and unarable, Government and alienated), with the assessment thereon, is here exhibited :—

Description of Land.	Area in Acres.	Full Survey Assessment.	Deduct portion of Assessment alienated.	Balance realizable or Survey Kumal.
		Rs.	Rs.	Rs.
Unarable .....	51,154	..	..	..
Arable khalsat .....	208,382	75,778	..	75,778
Arable joodee enam .....	27,783	11,455	2,241	9,214
Arable surwa enam and mahal joodee ....	48,135	20,910	15,366	5,544
Total area and assessment of 53 villages ..	335,454	1,08,143	17,607	90,536

61. In a country labouring under the disadvantages of a climate so precarious as that of Uthnee, an extensive resort to artificial irrigation becomes of the highest consequence. There are many signs indicating that cultivation carried on through this means prevailed to a much greater extent at some distant period. Fortunately water is more plentiful and attainable with less difficulty than in most parts of this province. In the valleys it is generally to be found within a few feet of the surface, and independently of well-sinking, an abundant supply might be got in many places from the nullas which run all through the hot weather. Doubtless as capital increases the people will do a good deal for themselves. But it would be very desirable that a survey should be made to ascertain whether some works of irrigation could not be advantageously undertaken by Government on a large scale either in some of the large nullas which run into the Krishna or on that river itself. The largest nulla or rather river in this talooka running into the Krishna is one which flows about five miles west of Uthnee past the village of Sinal.

62. During the last three years most of the villages of the Hoon-goond and Uthnee talookas, and also in other parts of the Belgaum collectorate, have been enclosed with high walls or hedges which give no small annoyance to the inhabitants. The walls are ten or twelve

feet high generally, sometimes more, and built close up to the houses. With but few gates to a village enclosed with a wall three-quarters of a mile or a mile in circumference, three or four gates only will be found. In the western villages hedges prevail. Small villages have generally two gates only, and very small ones a single gate. The natural result of this enclosing must be in the case of walls, a great interference with ventilation; in the case of both walls and hedges, the accumulation of much filth within the enclosed site which would otherwise not exist there had the inhabitants free means of exit. All this must greatly tend to the fostering of cholera—the scourge of the Southern Maratha Country. When it breaks out, cleanliness and ventilation experience has shown to be the best means by which this disease may be combated. Good reason may be easily found for enclosing towns like Bagulkote or Ilkul, the abodes of great wealth in the shape of money and jewels; but even in these cases a clear space of 40 or 50 yards should intervene between the walls and habitations. In the case of small agricultural villages no temptation to robbery in gangs exists, and the wall or hedge is productive of annoyance to the people and is dangerous in a sanitary point of view, without any corresponding advantage, as it can prove no bar to petty pilfering on the part of the inhabitants one from the other. The villagers are informed that they may have as many gates as they choose to build as long as they are built in a substantial manner and at their own expense. But if we compel the people to enclose their villages, we should carry our compulsion a step farther and compel them to provide a number of exits sufficient for the convenience of all, as voluntary combination to effect anything for the general good is hardly to be looked for at present among the natives of this country.

63. Along the banks of the Krishna there are in many places kooruns or grass lands which were certain to produce a larger revenue by the annual sale of the grass by auction than if given out for cultivation. These were excepted from cultivation under rule 14 of the joint report. Many of these revenue survey field or “numbers” are thickly covered with babul trees. There are also on the banks of the river and its tributary nullas tracts of waste land in which these trees abound. These numbers were also excepted from cultivation in the



cultivation registers where the size and number of the trees in proportion to the area appeared to justify such a proceeding. There is abundance of waste land elsewhere to supply the wants of the population for many years to come, and the conservation of these tracts for the growth of trees will tend to favourably affect the climate, and if judiciously managed afford a supply of valuable babul timber, which is far from plentiful in the Southern Maratha Country. The grass of these numbers will be sold by auction every year, and will go far towards making up what would be gained by the assessment had cultivation been permitted in the Uthnee talooka. The numbers thus set apart for the growth of trees amount to 48, containing 876 acres, bearing a survey assessment of Rs. 525-8. The number of trees was shown in the returns as about 12,000; this does not include the smaller trees. In the Hoongoond talooka in the same manner 12 numbers were set apart containing 197 acres, bearing an assessment of Rs. 128, and containing 3,650 trees. If these preserves are occasionally inspected and pruned, the increased returns to Government would doubtless in a short time well repay any expenditure incurred.

64. I now come to the settlement of the Yadwar petta, comprising the mahalkurree's division of the Gokak talooka, which formerly belonged to the estate of Pureshram Bhow Sahib of Tasgaum, and lapsed to Government on his death without heirs in 1849.

65. This mahal, as will be seen by the accompanying map, is situated immediately to the north-east of the remainder of the Gokak talooka and immediately to the south of the Uthnee talooka, and separated from it by about 20 miles of intervening jagheer territory.

66. Of the nineteen villages comprised in the Yadwar petta ten only are under immediate Government management; the remaining nine belong to the estate of the Kowzulgee Dessae, and to these the revision of assessment now under report does not extend.

67. The physical characteristics of this mahal are very similar to those of the Uthnee talooka, already described. Black soil prevails to a considerable extent, but much of it is poor, stony, and of deficient depth, particularly that on the trap of the northern villages. The climate, in common with that of Uthnee, is very precarious, and

the husbandry and condition of the people much on a par with what is found in that talooka. The usual dry crops (wheat, jowarce, cotton, &c.) are those raised in the villages of this mahal.

68. There are two bazars within the mahal—that held at Yadwar itself, which is the best, and that at one of the dessaee's villages, Kowzulgee. There are several bazars at no very great distance in the adjacent jagheer country and in the Purrusghur talooka, so that no want of facilities for the sale of produce exists. The surplus grain produced in this district finds its way to the bazars to the west, particularly to Sunkeshwur in the Chickodee talooka, where a return freight of Concan produce is obtained. Of the cotton grown a small part is retained for home consumption; the remainder goes to the coast for exportation. The road lately made from Lokapoor on the Kulladgee and Belgaum road, passing through Yadwar to Sunkeshwur, will greatly aid the transport of the surplus produce of this mahal.

69. In the town of Yadwar itself there are some 400 people supported by weaving. The principal manufacture is coarse cotton-cloth; but about one-sixth of the above number fabricate mixed silk and cotton goods, cholees, &c. The greater portion of these manufactures are sold at the bazar held at the neighbouring jagheer town of Moodhol. Besides those in Yadwar itself, there are a few weavers dispersed through the other villages.

70. The mahal contains 34,380 acres of arable and 3,466 acres of unarable land—in all 37,846 acres. The population of the Government villages is 6,494, being 110 per square mile. The measurement was commenced in 1848-49 by Lieutenant Kemball and completed in the following season by Mr. Bell. The classification was conducted under Mr. Young in 1851-52. The extent and result of the test of both operations are exhibited in the following statement:—

[Statement

Government Villages.			Nature, Extent, and Result of Test.													
Number.	Fields.	Arable Acres.	Nature of operation.	Total number of Villages tested.	By European Officers.				By Natives.				Total Test.			
					Fields.	Acres.	Average Error.		Fields.	Acres.	Average Error.		Fields.	Acres.	Average Error.	
							Per Cent.	Per Field.			Per cent.	Per field.			Per cent.	Per Field.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
10	1,700	34,380	Measurement.	9	187	3,957	Acres 1 Guntas 3	Rs. a. p. ..	..	..	..	..	187	3,957	Acres 1 Guntas 3	Rs. a. p. ..
10	1,700	34,380	Classification.	10	163	3,576	..	0 0 6	..	..	..	..	163	3,576	..	0 0 6

Total No. of Fields tested.	Number of Fields in which the difference between Original and Test Measurement did not exceed—											
	1	2	3	4	5	6	7	8	9	10	11	12
	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.
187	102	68	15	2	..	..	..	..	..	..	..	..
	Number of Fields in which the difference between Original and Test Classification was—											
	Nothing.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.				
		0 0 1 to 0 0 6	0 0 7 to 0 1 0	0 1 0 to 0 1 6	0 1 1 to 0 1 6	0 1 7 to 0 2 0	0 2 1 to 0 2 6	0 2 7 to 0 3 0	0 3 1 to 0 3 6			
163	11	79	56	12	5	..	..	..	..			

71. As before mentioned this mahal composed part of the estate of Pureshram Bhow Sahib of Tasgaum and lapsed to Government on his death in 1849. He was very deeply involved in debt, and his whole estates were mortgaged. This mahal had been for fourteen years previous to the Tasgaum chief's death mortgaged nominally to a wealthy sowcar named Narayen Rao Anunt Walunbeh, but in reality to two carcoons of the sowcar who were designated kumavisdars, and on whom civil and criminal jurisdiction over this district was conferred. It is not very probable that people of this kind would consider the welfare of the ryots; their sole object would be to get as much as possible out of them, and to this end in fact their whole energies were exerted. The supreme authority still remained with the chief, and to him accounts were yearly preferred by these two carcoons, and remissions sent up to him for sanction. When sanctioned, and a corresponding deduction made from the net revenue in his accounts with them, a similar amount of remission was by no means extended to the ryots; little or nothing was actually remitted, though payment of what could not be realized at the time might be postponed and the sum remain as an outstanding balance, the threat of exacting which would be used to deter the ryots from throwing up their land. The extent to which this system was carried may be understood from the fact that when this district lapsed to Government, the outstanding balances in the ten Government villages amounted to no less than Rs. 78,026, the average gross revenue during the first three years of our rule being Rs. 8,414, of which about one-tenth was remitted; and it did not always occur that the demand of the mortgagees alone were to be dealt with by the ryots, as the chief when hard pushed is said to have secretly collected what he could on his own account. At last, in consequence of the repeated complaints against the two mortgagees, a carcoon was appointed on the part of Government, with the consent of the chief, to overlook the revenue affairs of the mahal, which induced some amelioration in the state of the people. This system lasted for three years and ceased very shortly before the death of the chief.

72. The old assessment is represented to have been extremely unequal. Where no systematic revision has been made this inequality appears to be very generally met with, and is probably the result of some

diversity of tenure like that described in the 16th paragraph as existing hitherto in the Hoongoond talooka under the native system. This would be in some degree remedied by including lightly and heavily assessed land in each ryot's holding. This minute looking into and adjustment of individual cases is impracticable under our system of revenue management, and the consequence is that either the ryots are pressed beyond their means, or, from the highly assessed and superior land being relinquished, the productive powers of the district are impaired, and Government cannot obtain that amount of revenue from the district which under a better system it might fairly look for. A state of affairs of this nature will find a remedy just as much in an apportionment of the assessment, according to the capabilities of the land, as in a reduction of the gross assessment.

73. Previous to the introduction of the revised assessment we had held the district but three years, and the information conveyed by a diagram including so short a space of time would be of little value. An account of the cultivation, remissions, and collections since we have had the country will be found in Appendix E, and is, as regards the Government land, shown in the following table. No accounts are obtainable for any of the years previous to the lapse of the district. The acres of the statement have been obtained from the old land measures in the manner described in paragraph 51 with reference to the Uthnee talooka :—

Years.	Occupied or Cultivated Area.	Gross Assessment.	Remissions.	Actual Collections.
	Acres.	Rs.	Rs.	Rs.
1848-49....	15,756	10,343	1,142	9,201
1849-50....	11,637	7,783	1,329	6,454
1850-51....	11,258	7,117	337	6,780

74. Pureshram Bhow died on the 8th June 1848. The arrangements for the cultivation of the current year must then have been already made; accordingly for that (the first year of the statement) the

cultivation is entered at 15,756 acres ; the gross revenue Rs. 10,343, of which 1,142 was remitted and Rs. 9,201 collected. It may be very fairly doubted whether in this year the people gained by the change of rule. It is, I think, very improbable that close on nine-tenths of the gross revenue would have been actually collected by the former master of the district, hard as their management was. I know that in the Tasgaum talooka itself, belonging to the same chief, the ryots assert that they never paid much more than half the gross assessment, and from information derived from various sources I suspect they speak the truth in this. In the second year of our rule (1849-50) cultivation has decreased from 15,756 to 11,637 acres. This reduction is doubtless due to the over-collections of the previous year having reduced many of the poorer ryots to ruin, and partly owing to cultivation being no longer virtually compulsory or enforced by threat of levying outstanding balances. In this year the remission was in proportion much more liberal. In the last year of the statement the decrease of cultivation is trifling ; doubtless it would have been far greater, but the near approach of the revised rates encouraged all that possibly could to hold on, and in the year of settlement the cultivation had again increased to 13,202 acres.

75. In this district we want the experience afforded in other districts by the return of cultivation and revenue for a long series of years, and in fact the three years for which we have trustworthy accounts are useless for the purpose of deducing any general average of the capabilities of the district, as in each year either the cultivation or revenue is affected by some extraordinary circumstances, and the best argument for the suitability of the rates about to be proposed will be found in the capabilities and advantages, or rather disadvantages, of this district being similar to those of a portion of Uthnee, for which like rates have been, on sufficient data, considered suitable.

76. The rate proposed is fourteen annas as the maximum rate for dry-crop land, the same rate as that proposed for twenty-three villages composing the 1st class in the Uthnee talooka. The assessment resulting from this rate is contrasted with the old assessment in the following statement, in which the acres are those ascertained by the present survey. Of garden land there is but one Government

number containing four acres, assessed at Rs. 1-4 per acre, in the villages under report:—

Class.	No. of Villages.	Cultivated Area according to New Survey.	According to Old Survey.		According to New Survey.								
			Assessment.	Rate per Acre.	Land in Cultivation.			Wasto.			Total.		
					Area.	Assessment.	Rate per Acre.	Area.	Assessment.	Rate per Acre.	Area.	Assessment.	Rate per Acre.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
		Acres.	Rs.	R. a. p.	Acres.	Rs.	R. a. p.	Acres.	Rs.	R. a. p.	Acres.	Rs.	R. a. p.
1st.	10	13,202	7,660	0 9 3	13,202	6,593	0 8 0	5,296	2,431	0 7 4	18,498	9,024	0 7 10
1st.	10	13,202	7,660	0 9 3	13,202	6,593	0 8 0	5,296	2,431	0 7 4	18,498	9,024	0 7 10

77. The direct levies are absorbed in the above assessment. The following is the amount at which they were entered in the accounts:—

	Rs.	a.	p.
Patels and naiks .....	117	7	1
Koolkurnees .....	87	5	4
	Rs. 204	12	5

Annual compensation was awarded for the above to the total amount of Rs. 124. This amount is greater than usual in proportion to the amount claimed. The other emoluments in several cases being wholly insufficient, a more liberal compensation was awarded.

78. The general result of the settlement is exhibited in the statement at page 46. The gross assessment of the Government land according to the revised rates in the year of settlement (Rs. 6,593) falls but very little short of the average of the realizations of the two preceding years (Rs. 6,611). The remissions of this year (Rs. 1,206) are solely due to difference between the old and new rates being remitted when the latter were in excess of the former. In the current year the cultivation has increased to 15,385 acres, or very nearly as much as it was in the first year of our rule, while the gross assessment is Rs. 7,839, all which will in all probability be

realized. The total amount of land under the year 1852-53 is, however, swollen by the relinquished joodee and kumavisee joodee, which were as usual entered as khalsat at the time of settlement. The realizations from both Government and joodee land in 1850-51 (the last year of the old rates) were Rs. 10,248, and in 1852-53 (the first year of the new system) Rs 9,353, being but Rs. 895 less ; and considering that much of the joodee land before the settlement was held on compulsion, since resignations of parts of joodee enam estates were by the custom of the country not permissible, this result must be considered satisfactory. Acres 7,136 remain unoccupied Government waste, bearing an assessment of Rs. 3,295, affording room for a considerable increase of revenue as the resources of the district are developed :—

[STATEMENT



**STATEMENT showing the Cultivation, Assessment, Remissions, and Net Land Revenue for collection for 10 Villages composing the YADWAR MAHAL of the GOKAK TALOOKA under the Old and New Settlements.**

TENURE.	YEARS.	CULTIVATED LAND.				ARABLE WASTE.			Total Arable Land.	Total Net Land Revenue for Collection or Survey Assessment.
		Area.	Assessment.	Remissions.	Balance for Collection.	Area.	Assessment.	Net Produce of Grass Farms, &c. Fruit Trees, &c.		
1	2	3	4	5	6	7	8	9	10	11
Government Land.		Acres.	Rs.	Rs.	Rs.	Acres.	Rs.	Rs.	Acres.	Rs.
	Average of last 3 years ....	12,884	8,414	936	7,478	5,334	..	404	18,218	7,942
	1850-51..	11,258	7,117	337	6,780	7,344	..	619	18,002	7,390
	1851-52..	13,202	6,593	1,206	5,387	5,206	..	563	18,498	5,950
	1852-53..	15,385	7,830	..	7,839	7,136	3,295	..	22,521	11,134
Joodes and Kuma-vises Joodes.										
	Average of last 3 years ....	5,340	6,881	3,322	3,559	..	..	..	5,340	3,559
	1850-51..	5,367	6,918	3,450	3,468	..	..	..	5,367	3,468
	1851-52..	12,326	3,360	406	2,954	..	..	..	12,326	2,954
	1852-53..	3,320	1,514	..	1,514	..	..	..	3,320	1,514
Survu Enam and Mahal Joodes.										
	Average of last 3 years ....	11,733	6,083	..	6,083	..	..	..	11,733	6,083
	1850-51..	11,298	6,063	..	6,063	..	..	..	11,298	6,063
	1851-52..	3,556	6,063	..	6,063	..	..	..	3,556	6,063
	1852-53..	8,539	6,063	..	6,063	..	..	..	8,539	6,063
Total Arable Land on all Tenures.										
	Average of last 3 years ....	29,957	21,378	4,258	17,120	5,334	..	404	35,291	16,584
	1850-51..	27,923	20,098	3,787	16,311	7,344	..	619	35,267	16,930
	1851-52..	29,084	16,016	1,612	14,404	5,296	..	563	34,380	14,967
	1852-53..	27,244	16,416	..	16,416	7,136	3,296	..	34,380	18,711

The averages of past years entered in this statement are for three years, both as regards rupees and acres, which latter have been obtained approximately from the old land measures by calculation.

2. The three first lines in each division of the statement refer to the old settlement ; the two last, viz. for the years 1851-52 and 1852-53, to the new.

3. The rupees in the last column of this statement opposite the year 1852-53 form the survey kumal or total assessment capable of realization from the whole land held on the several tenures, while for the preceding years the rupees in this column represent the net land revenue for collection.

79. The joodee on the land held on that tenure was extremely heavy, so much so that the remissions under that head have very nearly equalled the realizations previous to the introduction of the revised assessment. Joodeedars were allowed at the settlement to relinquish parts of their wuttuns, as has been already described with reference to the Hoongoond talooka in the 25th paragraph.

80. A considerable variation in the amount appears in 1850-51 and the two succeeding years in the 3rd column of the statement under the head of surwu enam and mahal joodee. This is caused by the estates of the Kowjulgee Dessae having been attached on account of a dispute regarding the amount of joodee due by him, and consequently in 1851-52 appears under the head of joodee enam and enam land under attachment, and the attachment having been removed, these lands again (1852-53) are transferred to their original heads. At the time of settlement these lands were under attachment, and had been so since the 25th August 1851; but being informed that the attachment would be speedily removed with the concurrence of the Collector, I refrain from introducing the revised rates for the ensuing year into the lands of this dessae. The dispute was settled and the attachment finally removed by the Collector on the 9th of December last, which measure was sanctioned by Government resolution No. 473, dated 26th January 1853.

81. The total area of this mahal (arable and unarable, Government and alienated), together with the assessment thereon, is exhibited in the following statement:—

Description of Land.	Area.	Full Survey Assessment.	Deduct portion of Assessment alienated.	Balance of Assessment realizable or Survey Kumal
	Acres.	Rs.	Rs.	Rs.
Unarable .....	3,466	....	....	....
Arable khalsat .....	22,521	11,134	....	11,134
Arable joodee and kumavisee joodee	3,320	1,773	259	1,514
Arable surwu enam and mahal joodee .....	8,539	30,139	24,076	6,063
Total area and assessment for ten villages .....	37,846	43,046	24,335	18,711

82. This report is sent in at an unusually late date from the circumstances alluded to in the 2nd paragraph of this report. I was repeatedly obliged to call on the mamlutdars for explanation on various points which I should not have otherwise needed to do, and the last even of the ordinary returns required from the mamlutdars was not received from the Hoongoond mamlutdar till the month of May last, though repeatedly written for.

I have the honour to be, &c.

W. C. ANDERSON,

Supt. Revenue Survey and Assessment S. M. C.

*Superintendent's Office, Belgaum,*

*26th July 1853.*

NOTE.—The remaining history of this district since 1852-53 is given in the Appendix at page 117.

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*STATEMENT showing the Number of Govern-*

YEARS.	Number of Villages.				
		Acres.	Assessment.	Deduct Remissions.	Dry
1	2	3	4	5	6
			Rs.	Rs.	Acres.
1820-21....	136	....	68,400	1,041	....
1821-22....	"	....	71,563	623	....
1822-23....	"	....	71,860	1,462	....
1823-24....	"	....	82,826	12,079	....
1824-25....	"	....	81,950	17,465	....
1825-26....	"	91,951	82,072	19,827	91,332
1826-27....	"	96,568	82,312	16,816	95,893
1827-28....	"	94,533	95,026	40,616	93,987
1828-29....	"	96,898	90,668	32,919	96,246
1829-30....	"	97,051	86,334	37,073	96,453
1830-31....	"	96,942	82,007	28,979	96,239
1831-32....	"	95,409	70,603	22,310	94,764
1832-33....	"	79,764	57,129	22,555	79,125
1833-34....	"	82,473	82,115	25,638	81,861
1834-35....	"	80,731	66,836	5,575	80,077
1835-36....	"	82,090	67,220	3,969	81,447
1836-37....	"	82,439	67,586	4,095	81,937
1837-38....	"	84,886	69,347	5,099	84,275
1838-39....	"	86,803	69,152	16,435	86,173

# APPEN

*Villages in the HOONGOOND TALOOKA from 1820-21 up to 1850-51, the extent of  
the same for the 31 years*

## GOVERNMENT LAND IN CULTIVATION.

*Remaining on account of—					Total.
Crop Land.	Rice Land.		Garden Land.		
	8	9	10	11	12
Rs.	Acres.	Rs.	Acres.	Rs.	Rs.
66,558	....	801	....	....	67,359
70,006	....	934	....	....	70,940
69,513	....	885	....	....	70,398
69,576	....	933	....	238	70,747
63,618	....	714	....	153	64,485
61,116	558	982	61	147	62,249
64,132	569	1,051	106	313	65,496
53,450	485	838	61	122	54,410
56,613	531	886	121	250	57,749
48,286	476	726	122	249	49,261
51,768	582	1,027	121	233	53,028
47,137	524	906	121	250	48,293
33,596	518	769	121	209	34,574
55,340	467	868	145	269	56,477
60,027	508	975	146	259	61,261
62,075	511	934	132	242	63,251
62,624	369	625	133	242	63,491
63,125	479	845	133	278	64,241
51,664	507	810	123	243	52,717

1839-40....	[See Note 6.] 137	87,116	71,671	3,193	86,507
1840-41....	"	88,101	73,928	3,595	87,472
1841-42....	"	87,992	74,740	5,808	87,373
1842-43....	"	82,847	70,802	2,130	82,219
1843-44....	"	79,929	67,738	593	79,293
1844-45....	"	80,530	67,581	37	79,890
1845-46....	"	82,265	68,425	1,676	81,632
1846-47..	"	87,864	73,020	1,349	87,145
	3	2,773	1,615	....	2,773
1847-48..	137	93,052	75,663	974	92,350
	3	2,773	1,680	....	2,773
1848-49..	137	94,308	75,747	210	93,606
	3	3,019	1,690	....	3,019
1849-50..	137	95,813	76,245	64	95,145
	3	2,965	1,696	....	2,965
	137	92,897	73,595	67	92,225
	3	2,825	1,688	....	2,825
1850-51..	1	7,711	4,061	....	7,674
[See Note 7.]	1	350	236	....	350

67,349	494	891	115	238	68,478
69,149	526	988	103	196	70,333
67,750	523	997	106	176	68,932
67,410	520	1,043	108	219	68,672
65,865	529	1,061	108	219	67,145
66,257	532	1,066	109	221	67,544
65,535	524	1,001	109	213	66,749
70,214	519	1,027	200	430	71,671
1,635	....	....	....	....	1,635
73,216	488	979	215	494	74,689
1,680	....	....	....	....	1,680
74,067	487	979	215	491	75,537
1,690	....	....	....	....	1,690
74,792	452	894	216	495	76,181
1,696	....	....	....	....	1,696
72,140	456	893	216	495	73,528
1,688	....	....	....	....	1,688
3,966	....	....	37	95	4,061
236	....	....	....	....	236





2	63,230	505	914	133	244	63,867
1	1,678	....	....	....	....	1,678
4	3,966	....	....	37	95	4,061
0	236	....	....	....	....	236
4	72,886	481	954	212	481	74,321
1	1,678	....	....	....	....	1,678
4	3,966	....	....	37	95	4,061
0	236	....	....	....	....	236

ore omitted.

orded in the old native land measure and has therefore been omitted.

respond with the diagram in the body of the report.

rent ; but a fraction of it (on the average Rs. 280 per annum) has never been realized, and has since been  
l arises from Kyadgirree, which had up to this year been included as a hamlet in Chillapoor, one of the  
ached in 1850-51. The accounts of three of these villages were obtained from 1846-47. For one village  
pared from the village revenue accounts deposited in the talooka kutcheries under the superintendence

## DIX A.

*Government Lands, Cultivated and Waste, and of Alienated Land, together with the contained in the above period.*

GOVERNMENT WASTE LAND.		GOVERNMENT LAND CULTIVATED AND WASTE.		JODDEE LAND.		
Acres.	Grazing Farm, Sheep Tax, and sale of Fruit Trees, &c.	Sum of Columns Nos. 3 & 13.	Net Revenue, being sum of Columns Nos. 12 & 14.	Joodee.	Joodee Assessment.	Deduct Remissions on all account.
13	14	15	16	17	18	19
	Rs.	Acres.	Rs.	Acres.	Rs.	Rs.
55,385	1,144	1,43,895	65,011	10,772	7,201	488
721	37	3,592	1,715	309	174	27
1,068	40	8,779	4,101	153	79	....
41	....	391	236	25	25	....
47,998	4,925	1,40,785	79,246	10,755	9,240	2,109
721	37	3,592	1,715	309	174	27
1,068	40	8,779	4,101	153	79	....
41	....	391	236	25	25	....

written off as irrecoverable. During the last eighteen years these balances have been of entirely insignificant a 136 villages of previous years appearing henceforward as a separate village.

no accounts were procurable previous to those for 1850-51.

of experienced carcoons from the Survey department, and is, I believe, as nearly correct as the nature of the date v

## APPENDIX B.

*List of Government Villages in the HOONGOOND TALOOKA to be assessed as specified in the Table inserted after the 19th paragraph of this Report.*

Class.	Names.	Class.	Names.
1st.—Maximum rate 1 Rupee.	1. Chiknal.	1st.—Maximum rate 1 Rs.	19. Sooleebhavee.
	2. Oopenal.		20. Molloor.
	3. Seedunkol.		21. Eiwullee.
	4. Benkunwarrec.		22. Kuleegood.
	5. Bheemunghur.		23. Numbulgoondee.
	6. Goodoor.	2nd.—Maximum rate 14 Annas.	1. Hoongoond.
	7. Wudeegirree.		2. Teemapoor.
	8. Dammoor.		3. Nagoor.
	9. Mooruddee.		4. Yedeehullee.
	10. Gandal.		5. Buneehuttee.
	11. Kelloor.		6. Veerapoor.
	12. Sungapoor.		7. Chitwadgee.
	13. Tuljeekirree.		8. Hereh Badwadgee.
	14. Gorjeenhal.		9. Chik Badwadgee.
	15. Chillapoor.		10. Ramwadgee.
	16. Kyadeegirree.		11. Hugedal.
	17. Koonbenchee.		12. Ghuteegnoor.
	18. Hovinhullee.		

Class.	Names.	Class.	Names.
2ND.—Maximum rate 14 Annas.	13. Bekumuldinne.	2ND.—Maximum rate 14 Annas.	35. Eelhal.
	14. Rewurechal.		36. Honurhulle.
	15. Kumuldinne.		37. Herch Yerunkirree.
	16. Jyal Kumuldinne.		38. Chik Yerunkirree.
	17. Cheet Kumuldinne.		39. Bevinmuttee.
	18. Mun Muthunhal.		40. Hunchinhal.
	19. Kesurpentee.		41. Belgal.
	20. Wudergoonal.		42. Ecdulgee.
	21. Magee.		43. Beesulhal.
	22. Ramthal.		44. Chiturgee.
	23. Yelinhuttee.		45. Sungum.
	24. Madapoor.		46. Nundunoor.
	25. Gungoor.		47. Wurgodinnee.
	26. Kulgowunhal.		48. Herch Mulgaum.
	27. Renjunkop.		49. Chik Mulgaum.
	28. Dhunnoor.		50. Kutkoor.
	29. Kumdhut.		51. Beesuldinne.
	30. Murol.		52. Toorudgee.
	31. Kop.		53. Howunnoor.
	32. Kowjgunoor.		54. Wulkuldinne.
	33. Unupkuttee.		55. Papnathunal.
	34. Kongwar.		56. Chowud Kumuldinne.

Class.	Names.	Class.	Names.
2ND.—Maximum rate 14 Annas.	57. Kumutgee.	2ND.—Maximum rate 14 Annas.	79. Chik Adapoor.
	58. Soorleekul.		80. Hereh Adapoor.
	59. Yernaikunhal.		81. Needusnoor.
	60. Chik Magee.		82. Konoor.
	61. Boodeehal.		83. Palthee.
	62. Moognoor.		84. Hemwadgee.
	63. Buswunhal.		85. Umurwadgee.
	64. Busreekuttee.		86. Islampoor.
	65. Khywadgee.		87. Jumuldinnee.
	66. Chik Hoolkoompee.		88. Humeenhal.
	67. Mulgeehal.		89. Gowunhal.
	68. Chutneehal.		90. Gorabal.
	69. Toomb.		91. Chik Wuteegirree.
	70. Kesurbhavee.		92. Tareewal.
	71. Chinapoor.		93. Nundwadgee.
	72. Heroor.		94. Hurnapoor.
	73. Ingulgree.		95. Chamlapoor.
	74. Hereh Wateegirree.		96. Khumbleehal.
	75. Hereh Singungootee.		97. Kudduee.
	76. Singungootee.		98. Boodeehal.
	77. Gopursamee.		99. Dasbal.
	78. Solubgirree.		100. Pochapoor.

*STATEMENT showing the Number of Government Villages*

YEARS.	Number of Villages.	Acres.	Assessment	Deduct Remissions	D
1	2	3	4	5	6
			Rs.	Rs.	Acres
1839-40....	42	121,930	61,108	8,535	119,140
1840-41....	42	118,054	56,679	12,810	115,344
1841-42....	42	116,145	54,161	12,219	113,465
1842-43..	42	113,599	50,406	4,226	110,967
	4	14,435	19,411	2,068	14,435
1843-44..	42	105,154	44,620	9,433	10,231
	4	8,558	11,210	2,831	8,558
	42	102,862	42,395	5,866	100,144
1844-45..	4	8,665	10,582	1,635	8,665
	5	4,376	5,322	465	4,376
	42	100,307	40,030	2,047	97,550
1845-46..	4	8,442	10,064	307	8,442
	5	5,535	7,866	709	5,535
	1	2,762	2,565	549	2,762
	42	111,098	45,357	2,431	108,216
1846-47..	4	10,763	13,487	1,280	10,763
	5	5,870	8,058	1,631	5,870
	1	2,857	2,000	221	2,857
	42	113,353	45,167	5,227	110,475
1847-48..	4	9,937	12,064	1,876	9,937
	5	5,652	7,470	835	5,652
	1	1,613	1,227	241	1,613
	42	105,582	40,162	2,342	102,648
1848-49..	4	8,958	10,659	1,116	8,958
	5	4,621	5,505	439	4,621
	1	1,096	804	308	1,096
	42	97,468	36,015	1,505	94,521
1849-50..	4	7,906	9,504	247	7,906
	5	4,111	4,866	101	4,111
	1	1,448	576	5	1,448
1850-51..	42	92,369	37,419	....	89,422
	4	7,000	7,000	....	7,000

*ages in part of the UTHNEE TALOOKA from 1839-40 up to 1850-51, the Extent  
the same for the 12 years*

GOVERNMENT LAND IN CULTIVATION.

Remaining on account of—						Total.
Dry Crop Land.		Rice Land.		Garden Land.		
	7	8	9	10	11	12
s.	Rs.	Acres.	Rs.	Acres.	Rs.	Rs.
11	51,328	....	....	2,789	1,245	52,573
26	42,616	....	....	2,728	1,253	43,869
28	40,699	....	....	2,717	1,243	41,942
33	44,912	....	....	2,666	1,268	46,180
15	17,312	....	....	20	31	17,343
37	33,901	....	....	2,784	1,286	35,187
38	8,348	....	....	20	31	8,379
29	35,252	....	....	2,733	1,277	36,529
51	8,926	....	....	14	21	8,947
30	4,747	....	....	16	110	4,897
55	36,705	....	....	2,752	1,278	37,983
8	9,712	....	....	24	45	9,757
4	7,034	....	....	21	123	7,157
14	1,987	....	....	28	29	2,016
9	41,698	....	....	2,879	1,328	43,026
19	12,172	....	....	24	45	12,207
70	6,371	....	....	....	56	6,427
28	1,748	....	....	29	31	1,779
36	38,608	....	....	2,917	1,332	39,940
3	10,125	....	....	24	63	10,188
2	6,579	....	....	....	56	6,635
33	955	....	....	30	31	986
2	36,484	....	....	2,940	1,336	37,820
14	9,480	....	....	24	63	9,543
1	5,010	....	....	....	56	5,066
6	465	....	....	30	31	496
4	33,186	....	....	2,944	1,324	34,510
2	9,195	....	....	24	62	9,257
1	4,709	....	....	....	56	4,765
8	540	....	....	30	31	571
8	36,099	....	....	2,891	1,320	37,419
6	9,242	....	....	24	62	9,304





## APPENDIX D.

*List of Government Villages in the part of the UTHNEE TALOOKA to be assessed as specified in the Table inserted after the 53rd paragraph of the Report.*

Class.	Names.	Class.	Names.
1st.—Maximum rate 14 Annas.	1. Uthnee.	1st.—Maximum rate 14 Annas.	19. Boodunee.
	2. Mussurgoopce.	2nd.—Maximum rate 12 Annas.	20. Belwulmuttee.
	3. Nagnoor.		21. Goolbal.
	4. Sinal.		22. Boodcehal.
	5. Sutte.		23. Bisunal.
	6. Dodwad.		
	7. Aeenapoor.		1. Yekunchee.
	8. Khuwutkop.		2. Budchee.
	9. Shunkurhuttee.		3. Honwad.
	10. Gulgullee.		4. Kukmurree.
	11. Umuljhurree.		5. Bijurgee.
	12. Kaloor.		6. Kotulgee.
	13. Yedeehullee.		7. Yeleehudulgee.
	14. Rubkuree.		8. Kohullee.
	15. Gunnee.		9. Badugee.
	16. Chick Hunchinal.		10. Aeegullee.
	17. Hereh Hunchinal.		11. Ulginhal.
	18. Chondapoor.		12. Babanuggur.

**STATEMENT showing the Number of Govern**

YEARS.	Number of Villages.				
		Acres.	Assessments.	Deduct Remissions.	
1	2	3	4	5	6
1848-49.....	10	15,756	Rs. 10,343	Rs. 1,142	Acres 15,7
1849-50.....	10	11,637	7,783	1,329	11,6
1850-51.....	10	11,258	7,117	337	11,2
General Average. }	10	38,651	25,243	2,808	38
Average for last three years, from 1848-49 to 1850-51. }	10	12,884	8,414	, 936	12

1. Fractions of acres and rupees are omitted in this statement.
2. These villages had never been previously measured ; the acres have been approx
3. The net revenue entered in column 23 is that fixed for collection at the annual
4. This statement has been compiled from similar statements for each village, prepa  
of any argument founded on the information it presents.

## APPEN

*ent Villages in the YADWAR MAHAL of the GOKAK TALOOKA from 1848-49 up to  
and Collections on account of the same for*

GOVERNMENT LAND IN CULTIVATION.						
Remaining on account of—						Total.
Dry Crop Land.		Rice Land.		Garden Land.		
	7	8	9	10	11	12
	Rs.	Acres.	Rs.	Acres.	Rs.	Rs.
9	9,189	....	....	6	12	9,201
1	6,442	....	....	6	12	6,454
2	6,768	....	....	6	12	6,780
2	22,399	....	....	18	36	22,435
7	7,466	...	....	6	12	7,478

ely obtained from the old land measures.

ment ; outstanding balances there are none.

1 from the village revenue accounts deposited in the talooka kutcheries, under the superintendence



## APPENDIX F.

*List of Government Villages in the YADWAR MAHAL of the GOKAK TALOOKA to be assessed as specified in paragraph 76 of the Report.*

Class.	Names.	Class.	Names.
1st.—Maximum rate 14 Annas.	1. Yadwar.	1st.—Maximum rate 14 Annas.	6. Beesunkop.
	2. Kumkirree.		7. Kamunkuttee.
	3. Teemapoor.		8. Toondeekuttee.
	4. Reidurhuttee.		9. Kopudhuttee.
	5. Venkutapoor.		10. Hunumşagur.

W. C. ANDERSON, Captain,  
Supt. Revenue Survey and Assessment, S. M. C.

No. 577 OF 1853.

From Captain G. WINGATE,  
Revenue Survey Commissioner,

To J. D. INVERARITY, Esq.,  
Collector of Belgaum.

SIR,—I have the honour to forward for transmission to Government an original report (No. 267, dated 26th ultimo) from Captain W. C. Anderson, Superintendent of Revenue Survey in the Southern Maratha Country, in which he gives a detailed account of the revised assessment introduced by him at the settlement of 1851-52 into the Hoongoond talooka, 53 villages of Uthnee, and 10 villages forming the Yadwar division of the present Gokak talooka.

2. The rates for all of these districts were fixed by me; but Captain Anderson's report affords on all points so full and satisfactory an elucidation of the past and present circumstances of the several districts, and of the considerations that led to the adoption of the rates fixed upon, as to make it almost unnecessary for me to add a single remark. I shall not therefore attempt to follow Captain Anderson through all the details of his very clear report, but confine my attention to a few points on which I feel desirous of making some brief observations.

3. The survey operations connected with the measurement and classification of the land of the three districts are noticed in the paragraphs of the report noted in the margin, 12 to 14, 45 to 46, 70. and are shown to have been executed with a great degree of accuracy.

4. The maximum dry-crop rates introduced in the several districts are as follows :—

	1ST CLASS.			2ND CLASS.		
	Rs.	a.	p.	Rs.	a.	p.
1. Hoongoond.....	1	0	0	0	14	0
2. Uthnee .. . . .	0	14	0	0	12	0
3. Yadwar .. . . .	0	14	0	....		

The rates of the villages of Budamee and Bagulkote, which adjoin Hoongoond, were Rs. 1-2, Rs. 1, and Rs. 0-14-0. The villages of both these districts possess some advantages in respect of markets over Hoongoond, but this is compensated by the better climate of the latter district. The villages of Bagulkote nearest to the Uthnee talooka have a maximum rate of 14 annas, which is also the rate for the 1st class of Uthnee villages, and in like manner the maximum of 14 annas for Yadwar is also the maximum for the adjoining villages of Purrusghur which are similarly situated. The rates selected for the three districts have therefore been conformed to the rates previously introduced into adjoining districts similarly circumstanced as to climate, markets, &c.

5. Captain Anderson gives a very clear account of the past revenue management of the three districts. The Hoongoond talooka has been under Government management since 1818, but the Uthnee talooka and also the Yadwar division are formed of lapsed jagheers and have only fallen in of late years. Captain Anderson's description of the revenue management of Uthnee and Yadwar under the jagheerdars may, I think, be relied on as correct in its general features, and the wretched picture of misrule which he places before us is, I think, particularly worthy of consideration at the present time, when the ryotwar system and revenue management of this presidency have been brought into most unmerited disrepute by the evidence of late witnesses in Parliament, and by writers on the India question, who have had little or no practical acquaintance with the system, and no opportunities of forming a correct judgment as to its merits or defects.

6. I have had unusually favourable opportunities, during the last few years especially, of observing the much-lauded results of settling with zemindars or middlemen for villages or talookas in the gross instead of with the actual proprietors and cultivators; and what I have learned of the working of the revenue management of the great jagheerdars of the Southern Maratha Country, of the khotes of Rutnagherry, and of the talookdars of Gujarat has greatly strengthened my previous convictions as to the immeasurable superiority of the system of management for the field assessments of our presidency,

which has gradually been raised on the foundations laid broad and deep by the wisdom of a Munro and an Elphinstone.

7. I have everywhere found that the actual proprietors and cultivators of the soil, with the aid of the village money-lenders, are the real creators of all the wealth to be found in the country, and that it is a grievous delusion to imagine that their efforts are at all assisted by the intervention of middlemen. These, whether jagheer-dars, khotes, or talookdars, I have found to be too generally quite indifferent to the welfare of the inferior landholders, and either sunk in sloth and sensual indulgence or greedy of money for purely selfish objects. The fostering care which they are so generally said to take of their ryots may exist, and does, I do not doubt, in rare instances, but a selfish rapacity, aggravated by the overwhelming debt in which they are almost everywhere plunged, and by the clamorous crowd of greedy relatives and sycophants by whom they are surrounded, is, I should say, the distinguishing characteristic of the middlemen or great landlords of our presidency.

8. The results of the settlement described by Captain Anderson if not so promising in a financial point of view, as in the case of some districts previously settled, are yet, I think, sufficiently so to secure Government against any serious reduction of revenue. In the case of Hoongoond, as pointed out by Captain Anderson, the collections of the last five years have been greatly swelled by extension of cultivation in anticipation of the new settlement, and the revenue of these years cannot therefore be fairly compared with the survey assessment. The average collections on account of land revenue in the Hoongoond talooka for the 31 years ending 1851-52 amounted to Rs. 86,893, and the survey realizable assessment of the whole arable land is Rs. 1,07,499, which affords an ample margin for increase. I feel satisfied that in a very few years the revenue of this district will rise and continue above the average of past collections.

9. The climate of Uthnee and Yadwar is so miserably uncertain, and the crops so liable to failure, that I do not feel so sanguine as to the financial prospects of the settlement there. I am satisfied, however, that our demands hitherto in both districts have been excessive, and that the collections made during the few years of our management have been beyond the capabilities of either district to continue



paying for a series of years. I do not consider that these collections afford a sound basis for a revenue settlement, or that any very useful comparison can be instituted between them and the new assessment. If the settlement enables these unfortunate districts to recover from their present state of depression and to arrive at a tolerable degree of prosperity, it will, I think, have accomplished all that can reasonably be anticipated.

10. The mode of giving effect to the settlements was that followed in districts previously settled, and does not appear to call for remark, except as regards the land recently assigned to the village police, adverted to in the 29th paragraph of the report. Some inconvenience has resulted from these assignments having been made subsequent to the field operations of the present survey, but in accordance with the old survey numbers. Captain Anderson also points out that cultivated land, where waste was not to be had, had been assigned in Hoongoond to shetsundees when the previous holders agreed to give it up. I am aware that the same thing was done in other districts, but I agree with Captain Anderson in thinking the expedient to be peculiarly liable to abuse, being fully persuaded that not one ryot in a hundred would of his own free will relinquish his land to a shetsundee. I am of opinion that a ryot should never be called upon to give up land without the offer of a fair compensation; for it appears to me that every interference with existing occupation on the part of Government must tend to delay the growth of a feeling of proprietary rights in the soil, which it is on so many accounts desirable to foster by every means in our power.

11. In regard to the future management of fields of which portions have been granted to shetsundees on service tenure, I am of opinion that the survey rules should be enforced in the case of these fields in exactly the same way as in that of others—that is to say that no portion of a field should be allowed on any consideration to remain unoccupied. If the portion besides that assigned to the shetsundee is now cultivated by a ryot and should be hereafter resigned or is now waste, the shetsundee should be called upon, in my opinion, to take it up, and if he decline to do so, then I think

he should be required to give up his own portion and receive a money-payment for his services instead. Captain Anderson thinks the money-payment would be generally preferred by the shetsundees, and I have little doubt of this myself, or of the superiority of cash over land as a remuneration for village police ; but as the latter question has been disposed of by the Government letter in the Judicial department to the Magistrate of Dharwar, quoted in the

No 6025, dated 29th July 1852. margin, I do not feel myself at liberty to re-open the discussion, or to offer any suggestions beyond what are called for in order to provide for the satisfactory administration of the survey settlement.

12. I would invite attention to the remarks made in the 31st and 32nd paragraphs of the report relative to the scarcity of carts in the Hoongoond talooka, which is without question attributable to the want of any good cart-roads through the range of hills which shut in this talooka on the western side. This evil will be partially remedied, as pointed out by Captain Anderson, by the construction of the proposed road from Bagulkote to Hoongoond ; but the other line suggested by him from Goodoor to Jaleehol is not less urgently required to open a cart communication with the great plain to the southward and with the port of Compta, to which most of the Hoongoond cotton now reported finds its way. The completion of the line of road from Hoongoond through Jaleehol, Bettagirree, Kittoor, and Nundecgurh to the Tullewadee ghaut, already partially cleared, would, I have no doubt, be productive of most of the advantages anticipated by Captain Anderson, and as a very small outlay would suffice to make it practicable for carts for the whole distance, I trust you will be able to recommend it for sanction.

13. Captain Anderson alludes in his 34th paragraph to the lawless state of things prevailing in the Nizam's districts adjoining Hoongoond, and points out that in defiance of peremptory instructions issued by the Most Noble the Governor General to the Resident at Hyderabad, no reparation has yet been made to certain inhabitants of our villages who were plundered of property to a large amount by marauders from the Nizam's country three years ago. The honour of our Government is clearly pledged to obtain redress for

the plundered parties, and the matter will not, I trust, be allowed to drop until this is done.

14. In the 61st paragraph of his report Captain Anderson points out the great value of irrigation in a district where the rains are so liable to fail as in Uthnee, and thinks it desirable that a survey should be made to ascertain whether some works of irrigation could not be advantageously undertaken by Government on a large scale. Colonel Scott, who is now engaged in examining the rivers of the Southern Maratha Country, has it, I believe, in contemplation to extend his researches to the upper portion of the Krishna river, from which it is possible that a canal might be led so as to irrigate a portion of the Uthnee talooka. The nullas passing through the district of Uthnee itself are capable, I believe, of being dammed for irrigation purposes in different places with advantage, but the works, I think, would not be of sufficient magnitude or importance to make it worth the while of Government to order a special survey of the localities with a view to their construction.

15. As bearing on the future welfare of the districts, and therefore not unimportant to the survey settlements, I would also invite your consideration of the remarks made by Captain Anderson in the 62nd paragraph of his report, relative to the ill effects in a sanitary point of view, and the many inconveniences to the people, resulting from the plan lately resorted to of enclosing agricultural villages in many parts of your collectorate with walls or hedges of thorns for the better protection of the inhabitants from robbery. I have always looked upon the ruinous condition or total absence of the walls and fences that once surrounded the villages of the Southern Maratha Country as unquestionable proof of the comparative security in which the people live under our rule, and have never been able to persuade myself that any conceivable advantages for police purposes, which might be secured by the restoration of these defences, could compensate for the many and serious evils which they entail upon the villagers. I have myself heard many complaints on the subject, and witnessed the inconveniences arising from denying the villagers free means of egress. I recollect having observed a village entirely fenced round with thorns in which there was only a single opening

placed on the side of the village away from the tank to which the villagers were in the habit of resorting for water, and the consequence was that the villagers, instead of having to carry water to their houses from a few hundred yards only, had to make a circuit of upwards of half a mile, which was no trifling inconvenience to be exposed to every day of their lives. I am satisfied that the people would greatly prefer to incur the risk of robbery, were it tenfold greater than it is, to suffering the daily inconveniences which inevitably result from enclosing their villages with walls or fences.

16. In concluding these remarks I would solicit the sanction of Government to the details of the settlement described by Captain Anderson's report, and to the assessment being guaranteed for thirty years, as has been done in the case of all the districts previously settled.

I have the honour to be, &c.

G. WINGATE,

Revenue Survey Commissioner.

*Camp Poona, 24th August 1853.*

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No. 727 OF 1853.

From J. D. INVERARITY, Esq.,  
Collector of Belgaum,

To W. COURTNEY, Esq.,  
Revenue Commissioner, S. D.

SIR,—By the Resolution of Government in the Territorial department, Revenue (No. 1919, dated 23rd March 1852), Captain Wingate's proposition to introduce new rates of assessment into the Hoongoond talooka, the Yadwar mahal, and fifty-three villages of the Uthnee talooka of this collectorate without awaiting the submission of a detailed report was allowed, and I have now the honour to submit a letter (No. 577, dated 24th ultimo) from Captain Wingate, Revenue Survey Commissioner, with its accompaniment, being a report (No. 267, dated 26th of the preceding month), by Captain W. C. Anderson, Superintendent of Revenue Survey and Assessment in the Southern Maratha Country, giving a detailed account of the revised assessment introduced by him into those districts and villages at the settlement of A.D. 1851-52.

2. The Hoongoond district is, as described by Captain Anderson, the most eastern talooka of this collectorate, enjoying a good climate, inasmuch as its monsoons are even and certain, and possessing a generally good soil, with a thrifty and laborious population, but with scarcely an agricultural cart, and without a made-road beyond the limits of its town and villages. Its area may be reckoned at about five hundred square miles, and it contains one hundred and thirty-eight Government and thirty-one alienated villages.

3. In the table embodied in his 3rd paragraph Captain Anderson has included among those belonging to Government the four villages of Kundgul, Gowunhal, Somlapoor, and Murkutgirree, claimed in joodee enam by Sungun Bussapa bin Kench Reddy Gowda as Nargowra of Summut Kundgul, which have been attached, and the proceeds of which have been placed in deposit pending reply

to a reference made to the Honourable the Court of Directors (*vide* paragraph 2 of Mr. Chief Secretary Malet's letter to the Enam Commissioner, No. 6900, dated 20th September 1850).

4. These villages, however, are in the accounts of this office still retained in the list of alienations, as directed in paragraph 7 of the Government letter No. 4191, dated 12th June 1852, the views expressed in which were confirmed by the Government resolution No. 5423, dated 17th August following.

5. The measurement of the one hundred and forty-two villages named by Captain Anderson commenced in 1848-49, and was completed in the two following seasons. Their classification was accomplished in the season 1850-51, and, as stated by Captain Wingate, both operations have been executed with a great degree of accuracy, Captain Anderson showing in his 14th paragraph, in regard to the former, that in but ten numbers were found errors in excess of two per cent., and in the latter that "but one solitary error in excess of two annas was discovered."

6. The rates were fixed by Captain Wingate, the maximum for dry-crops being one rupee for twenty-three villages, situated on the western border of the district, and enjoying the best climate and the convenience of good markets, and fourteen annas for the remaining one hundred and nineteen villages of the talooka, situated further to the eastward.

7. The garden land of the talooka is quite insignificant. It is distributed, as stated in Captain Anderson's paragraph, over fifty villages, and amounts to three hundred and nine acres. Its assessment, which averaged two rupees and five annas per acre, is now reduced to an average of one rupee eight annas and eight pies per acre, the maximum rate in any one case being two rupees and two annas per acre.

8. The rice land of the talooka is equally insignificant. It amounts, as stated by Captain Anderson in his 21st paragraph, to four hundred and fifty-four acres in thirty villages, principally in the eastern portion of the district. Its assessment, which averaged one rupee fifteen annas and three pies per acre, averages under the present survey one rupee twelve annas and four pies per acre.

9. The average reduction of assessment on land in cultivation is greater, as shown in Captain Anderson's 22nd paragraph, in the first class villages than in the others. In those it is from fourteen annas to nine annas six pies per acre, being a reduction of about 28 per cent. In these it is from eleven annas eight pies to nine annas five pies per acre, being a reduction of about 14 per cent.

10. The value of the huks of village and district officers absorbed in the survey assessment, though entered in the accounts at Rs. 3,303-12, has been admitted only where payment had not become obsolete, and compensation, pending the permanent settlement of these huks, has accordingly been allowed to district officers to the extent of thirty-six rupees eight annas, and two village officers to the amount of one thousand two hundred and thirty-two rupees four annas.

11. With the exception of the quit-rents payable by district officers which are not affected by the new assessment, quit-rents on all land held on joodee tenure have been lowered to the survey assessment wherever the former were in excess of the latter.

12. The whole area of the one hundred and forty-two villages reported on is entered in Captain Anderson's 12th paragraph at two lakhs seventy-eight thousand three hundred and sixteen acres, of which thirty-eight thousand two hundred and twenty-eight acres are unarable, and two lakhs forty thousand and eighty-eight acres are arable.

In paragraph 28 are given the details and assessment of this arable land as follows :—

Government land . . 160,143 acres, assessed at Rs. 90,356

Joodee land . . . . . 30,412 acres, assessed at

Rs. 18,224, but

paying to Govern-

Surwu enam and . . . . . 7,076

mahal joodee . . 49,553 acres, assessed at

Rs. 27,825, but

paying to Govern-

ment a quit-rent of 10,067

It thus appears that in this district there are 79,945 acres of alienated land, assessed at Rs. 46,049, which yield to Government a quit-rent of Rs. 17,143, and to their holders a revenue of Rs. 28,906. ●

13. The full Government rental of the Hoongoond talooka is seen from the foregoing paragraph to be one lakh seven thousand four hundred and ninety-nine rupees, and the result of the settlement for 1851-52, as shown in Captain Anderson's 26th paragraph, is, when compared with the average collections of the previous years of our rule, a present diminution of revenue to the extent of  $8\frac{1}{2}$  per cent. But I quite agree with Captain Wingate in his 8th paragraph in thinking that the survey realizable assessment of the whole arable land affords an ample margin for increase, which I am further of opinion can only be permanently obtained by the introduction into the talooka of the means of irrigation and of communication by roads wherever practicable.

14. Captain Anderson proceeds in his 35th paragraph to describe that portion of the Uthnee talooka, comprising fifty-three villages, in which the revised rates were introduced at the settlement for 1851-52, sixteen of these villages being under the charge of the mahalkurree of Gulgulleh, situated along the banks of the Krishna river between the talookas of Bagulkote and Uthnee proper, and the remainder, in number thirty-seven, forming a portion of the charge of the mamlutdar of Uthnee.

15. The climate of the eastern portion of Uthnee is very uncertain. The soil is generally poor and has hitherto been unequally assessed, and the population of this tract is scanty. That part of the district which is situated on the Krishna river is more favoured, and here the villages are in consequence more flourishing.

16. The fifty-three villages reported on are stated (paragraph 42) to contain an area of five hundred and twenty-four square miles. The measurement of them was commenced in 1848-49 and completed in the three following seasons. Their classification was commenced in 1850-51 and was completed in the following season. In the test of these operations larger errors were discovered than in the case of Hoongoond; the cause is stated in a note to Captain Anderson's 46th paragraph to have been explained in Captain Wingate's letter to Government (No. 274, dated 17th August 1852, paragraphs 9 to 11), of which no copy exists in this office.

17. Captain Anderson shows very clearly (paragraphs 48 to 52)



the necessity for a reduction in the assessment of these villages which escheated on the demise of the Neepaneeekur and other chiefs whose measurements and rates were continued for want of others. The new rates have, as in Hoongoond, been fixed by Captain Wingate, and are the same as those previously introduced with the sanction of Government into adjacent tracts similarly circumstanced.

18. The maximum dry-crop rate for twenty-three villages immediately about Gulgulleh and in the western portion of the talooka is fourteen annas per acre, and for the remaining thirty villages less favourably situated it is twelve annas per acre, rates which may be considered sufficiently high for so poor a district in every way as Uthnee.

19. The garden lands in these villages amount to eight hundred and fifty-three acres, the former average rate on them (one rupee five annas and four pies) being reduced by the survey to one rupee four annas and three pies per acre, and the maximum assessment on this description of land being in any one case one rupee and twelve annas per acre.

Under the new assessment doubtless in so arid a district as Uthnee irrigation from streams and wells will be applied to convert dry-crop into garden land, and I trust to have an opportunity after personal inspection of submitting a report upon the capabilities of some of the localities of this district, especially in regard to an old tank of large dimensions at Honwad, one of the second class villages of Captain Anderson's report, situated in the heart of the driest portion of Uthnee.

20. The average reduction of assessment on land under cultivation, as shown in Captain Anderson's 55th paragraph, is greater in the first than in the second class villages. In the former it is from eleven annas one pie to eight annas one pie, being a reduction of about  $18\frac{2}{3}$  per cent.; in the latter it is from seven annas one pie to five annas eight pies, being a reduction of about 9 per cent.

21. The value of the huks of district and village officers absorbed in the assessment, though stated in the accounts at Rs. 6,962-10-8, has been admitted, pending a final settlement in the case of village officers, only to the extent of Rs. 1,435.

Quit-rents on joodee land were treated as in Hoongoond, and all kumavisee joodee land was very properly entered as khalsat.

22. The whole area of the fifty-three villages reported on is entered in Captain Anderson's 45th paragraph at three lakhs thirty-five thousand four hundred and fifty-four acres, of which fifty-one thousand one hundred and fifty-four acres are unarable, and two lakhs eighty-four thousand three hundred acres are arable.

The arable land is detailed as follows in the 60th paragraph :—

Government land ..	208,382 acres, assessed at Rs. 75,778	
•••••	2,778 acres, assessed at	
	Rs. 11,445, but	
	paying to Govern-	
Surwu enam and	ment a rent of ..	9,214
mahal joodce ..	48,135 acres, assessed at	
	Rs. 20,910, but	
	paying to Govern-	
	ment a rent of ..	5,544

It thus appears that in these fifty-three villages there are 75,918 acres of alienated land, assessed at Rs. 32,365, yielding to Government a quit-rent of Rs. 14,758, and to their holders a revenue of Rs. 17,607.

23. The total realizable revenue of these villages, were all their lands under cultivation, is Rs. 90,536, which, with reference to the collections from cultivated land on all tenures for 1851-52, Rs. 53,156 (*vide* statement embodied in paragraph 57), gives a wide margin for increase.

24. The result of the settlement is, as seen from Captain Anderson's 57th paragraph, the maintenance, with an increased cultivation, of the average realizations of the five preceding years, and, it may be confidently predicted, the future welfare of the district.

25. Captain Anderson acted judiciously, as stated in his 63rd paragraph, in devoting certain lands on the banks of the Krishna and its tributary nullas—aggregating in Uthnee 876 acres, assessed at Rs. 525-8, and in Hoongoond 197 acres, assessed at Rs. 128—to the growth of grass and babul trees, the increase of the latter being an object in a country so devoid of timber as these districts are.

26. In his 64th and following paragraphs Captain Anderson

details his proceedings in the lately-lapsed mahal of Yadwar, containing ten Government and nine alienated villages, possessing an uncertain climate, a comparatively poor soil, with few trees, but supplied with a good road, lately made through its very centre and passing its chief market town (Yadwar), whereby the traffic of the district east and west is much facilitated.

27. The measurement of these ten Government villages was commenced in 1848-49 and completed in the following season. Their classification was accomplished in 1851-52, both operations being executed with very considerable accuracy, as is apparent from the tables in Captain Anderson's 70th paragraph.

28. For the Government villages of this mahal a maximum rate of fourteen annas per acre has been fixed for dry-crop land, and for the single piece of garden land in them, measuring four acres, an assessment of one rupee four annas per acre has been fixed.

29. The average reduction of assessment on land under cultivation is, as shown in the table in paragraph 76, one anna three pies per acre, the former average rate being nine annas and three pies, and the survey rate being eight annas, or an average reduction of about  $7\frac{1}{2}$  per cent.

30. The value of the huks of village officers, entered in the accounts at Rs. 204-12-5, were admitted, pending final settlement, to the extent of Rs. 124.

Quit-rents on land held on joodce tenure were treated as already explained in the case of the Hoongoond district.

31. The whole area of these ten villages is entered in Captain Anderson's 70th paragraph at thirty-seven thousand eight hundred and forty-six acres, of which three thousand four hundred and sixty-six are unarable, and thirty-four thousand three hundred and eighty are fit for cultivation.

In paragraph 81 are given the details and assessment of the arable land as follows:—

Government land 22,521 acres, assessed at ..	Rs. 11,134
Joodce land . . . . 3,320 acres, assessed at	
	Rs 1,773, but
	paying to Govern-
. ment a rent of ..	1,514

Surwu enam and

mahal joodee .. 8,539 acres, assessed at

Rs. 30,139, -but

paying to Govern-

ment a rent of .. Rs. 6,063

It thus appears that in these villages there are 11,859 acres of alienated land, assessed at Rs. 31,912, yielding to Government a quit-rent of Rs. 7,577, and to their holders a revenue of Rs. 24,335, and that the full Government rental of these ten villages amounts to Rs. 18,711.

32. The result of the settlement is the maintenance, with an increased cultivation, of very nearly the average collections of the two preceding years, as fully explained in Captain Anderson's 78th paragraph.

33. With reference to Captain Wingate's 5th to 7th paragraphs, I would state that no one, who has had experience of the survey settlements can doubt their perfect adaptation to the wants of the agricultural community of this part of the country. Giving, as they do, the utmost freedom in regard to cultivation, and recognizing to their fullest extent the proprietary rights of occupants subject to the single condition of payment of a very moderate assessment at stated periods, fixed so as to give a command of markets, they show the ryot that he has only to rely upon his own foresight, energy, and industry to improve his circumstances and status in society. In aid of his efforts Government too is ever ready to afford the means of irrigation, and of communication by roads wherever these are shown to be practicable and likely to lead to good results. A system of police also, whereby security of property has been much increased, has been lately introduced, so that it is difficult to see what more can be done by a controlling authority to ensure the prosperity of the people, who must now rely upon themselves to become individually and collectively wealthy and influential.

34. The difficulty adverted to in Captain Anderson's 29th paragraph, from the assignment to police shetsundees of whole fields according to former measurements which were superseded by the survey, was in some degree unavoidable, because the assignment of land to shetsundees in remuneration for service was urgent before the survey measurements were known to this department. When the

subject was brought to my notice in Captain Anderson's letter No. 113, dated 21st May 1852, measures were immediately taken to adapt shetsundee holdings to survey measurements, and the course indicated in Captain Wingate's 11th paragraph, viz. that of treating these holdings exactly as those of other ryots, has invariably been pursued by me, and on all occasions inculcated upon my subordinates. Indeed so fully am I impressed with the importance of maintaining the survey settlements in all their integrity, that it is my intention—as long ago intimated to Captain Anderson,—so soon as the shetsundee assignments have been completed, to submit to Government a proposition to enter all their lands as khalsat instead of service enam, and to exhibit in the annual accounts, as a remission in remuneration of service, the assessed value of the lands so appropriated. The transfer of land from a ryot to a shetsundee by (sunyhoot) persuasion, as stated in the same paragraph by Captain Anderson, on the information of Pandoorung Ramchundur, mamlutdar of Hoon-goond, has been always discountenanced and disallowed by me. In this mamlutdar's reply of the 24th instant to a reference made on this point, a translation of which is appended, he denies the practice.

35. The difficulty imagined by Captain Anderson in his 30th paragraph in effecting settlements with shetsundeeds by assignments of land under the existing rules has not been felt. Land is given to them exactly as to other ryots for cultivation, and where the assessment of the field or fields so given is in excess of the cash allowance for the office, the difference is everywhere paid as a matter of course. There being no difficulty as imagined, its avoidance by recourse to cash-payments, as advocated by Captain Anderson, seems superfluous. Captain Anderson states at the close of his 31st paragraph that “if the option was given to shetsundeeds of taking Rs. 18 a year in land or Rs. 16 in money, a large proportion would choose the diminished payment in money. Experience has shown the contrary. When the entertainment of new hands to make up the complement of police for the towns of Bagulkote and Tasgaum was contemplated, a large body of candidates offered their services to the Superintendent of Police while at those towns; but on being told that, as land was not available, they could only be entertained on a cash salary of Rs. 2 per mensem or Rs. 24 per annum, the majority

declined to serve, urging that the proposed cash-payment would be inadequate for their maintenance, and I quite agree with them that it would be so. I have no faith in the honesty of the man who, according to Captain Anderson, would prefer a cash-payment of Rs. 16 per annum to an assignment of land of the assessed value of Rs. 18. In the latter case not only does he receive the assessment of the land, but he obtains the cultivator's profits also, and is enabled to maintain his wife and children in comfort. In the other case he would, from the improvident habits of the class, have a difficulty in supporting even himself upon a salary of Rs. 1-5-4 per mensem, and would, as an ill-paid Government servant, consider himself licensed to use his authority as a pretext for plundering and living upon his neighbours. I therefore (as I have already said in the 6th paragraph of my letter No. 29, dated 23rd January 1852, to

*Vide Mr. Secretary Lumsden's letter No. 2811, dated 30th May 1851.* the address of Mr. Secretary Lumsden) cannot too highly eulogise the wisdom

which directed that encouragement should be extended to all village police to accept khalsat lands of the assessed value of their allowances instead of payments in cash.

36. In his 62nd paragraph Captain Anderson states that during the last three years most of the villages of the Hoongoond and Uthnee talookas, and also in other parts of the Belgaum collectorate, have been enclosed with high walls or hedges which give no small annoyance to the inhabitants; and Captain Wingate in his 15th paragraph says, "I have always looked upon the ruinous condition or total absence of the walls and fences that once surrounded the villages of the Southern Maratha Country as unquestionable proof of the comparative security in which the people live under our rule, and have never been able to persuade myself that any conceivable advantages for police purposes which might be secured by the restoration of these defences could compensate for the many and serious evils which they entail upon the villagers." My knowledge of the facts enables me to state that until the beginning of last year the Southern Maratha Country and adjacent districts were overrun with dacoits; that the country was parcelled out amongst various fraternities of robbers, and that the ease or difficulty with which entrance into a village could be effected had much to do with the determination of plunderers in

undertaking an expedition. It is no new project to enclose towns and villages with walls and hedges. The 2nd paragraph of Mr. Revenue Commissioner Williamson's letter to Government (No. 1492, dated 29th September 1837) contained a proposition, approved by Government on the 17th of the following month, and transmitted to this office with Mr. Chief Secretary Reid's letter No. 2251, dated 13th July 1840, which empowered a Collector to make grants for the repair of village walls; but no such assistance has been required in these districts. The people have themselves made those repairs and renovations to the walls, hedges, and gates of their towns and villages which were considered in the existing state of the country necessary, as subsidiary police arrangements, to enhance the security of property. Numerous and unnecessary openings in village walls and hedges everywhere existed, and it being no person's business to close them, they remained the ready means of ingress and egress to gang-robbers and burglars, of whom the Southern Maratha Country contains not a few—men to all outward appearance respectable, but in reality habitual depredators.

37. "The no small annoyance to the inhabitants, and the many and serious evils which these walls and hedges entail on the villagers," according to Captain Anderson and Captain Wingate, have never been made the subject of complaint to me. Had the evils existed in reality they would long ago have been removed through the philanthropy of these officers. Captain Anderson states that in "a village enclosed with a wall three-quarters of a mile or a mile in circumference three or four gates only will be found. Small villages have generally two gates only, and very small ones a single gate." The number of gates which a village has always possessed has not, as far as I know, been interfered with in any case. Such as exist have been found sufficient for all the exigencies of the inhabitants, who must always be the best judges of their own wants, and Captain Anderson admits that the villagers are informed they may have as many gates as they choose. The fort of Belgaum has a circumference of  $1\frac{1}{2}$  mile; but no one, as far as I know, has ever found fault with it because it has but two gates. Captain Anderson adds the walls are built close up to the houses. It is impossible for them to be otherwise, because the field

boundaries of the survey have been placed as close as possible to village sites. It does not clearly appear in what way the walls and hedges are an annoyance to the people. From the latter part of Captain Wingate's 15th paragraph it may seem that they are considered an annoyance, inasmuch as a sufficient number of openings for ingress and egress is not provided in them ; but, as admitted by Captain Anderson, the villagers may have as many gates as they choose. Captain Wingate informs me in his letter No. 641, dated 13th ultimo, that the village he alludes to in the paragraph quoted is Yedralee, lying immediately to the south of the fort of Purusghur, the fence of which he noticed in March 1850. The Superintendent of Police has been requested to report on the point of alleged annoyance, now for the first time brought to notice.

38. I look upon the generally flourishing condition of the village hedges as the best evidence of the satisfaction of the people at the increased security they afford them. There are, no doubt, discontented, evil-disposed characters in many villages to whom these measures are obnoxious ; but I quite agree in the sentiments expressed by Mr. Collector Dunlop in the 7th paragraph of his letter, of 3rd November 1836, to Government, in the Judicial department, where he says " when at Bagulkote on circuit I got the inhabitants to undertake the repair (of their town wall), which is now completed, and it is much to be regretted that so many have been suffered to go to ruin, for it is impossible to say when disturbances may break out, and the accumulations of years might be lost in an hour from the want of a little timely precaution."

39. But Captain Anderson considers that " the natural result of this enclosing must be, in the case of walls, a great interference with ventilation ; in the case of both walls and hedges the accumulation of much filth within the enclosed site, which would otherwise not exist there had the inhabitants free means of exit. All this must greatly tend to the fostering of cholera," &c. The results feared are by no means, I conceive, the necessary consequence of the existence of either walls or hedges. A free ventilation can always be had where streets are wide and well drained, and the maintenance of cleanliness in towns and villages is one of the duties of police to which more attention has been given of late years than formerly.



On this point I would beg to refer to the 52nd and 53rd paragraphs of my letter No. 468, dated 21st September 1849, which show the great progress then made in the construction and draining of streets in the Belgaum collectorate, and the comparative freedom from cholera enjoyed by the population of these parts when the disease was very virulent in the adjoining Dharwar, Bellary, and Sholapoor districts. The progress then made has in no ways now diminished, and the population of the larger towns are already taxing themselves for municipal purposes.

40. With reference to Captain Wingate's 12th and to Captain Anderson's 31st and 32nd paragraphs, I would state that the importance of lines of roads judiciously selected, and made at a small cost, sufficient for existing traffic, can never be over-estimated. Captain Anderson, however, is in error in supposing that a road to connect Hoongoond with the Belgaum and Kulladghee road at Bagulkote has been sanctioned. Such a road was proposed in the 8th paragraph of my letter in the General department, No. 821, dated 13th November 1852, but in the 4th paragraph of Mr. Secretary Lumsden's letter (No. 4607, dated 31st December following) it was intimated that this, with other proposals I had made for branch roads, would be considered separately, I being required to report that I was able myself personally to give a general attention to them while under construction. I have not further pressed this line of road because the personal superintendence such as I could give from a distance of a hundred miles would be unworthy of the name. I think, however, the First Assistant Collector at Kulladghee might personally superintend its construction after the line had been carefully laid out.

In his 10th paragraph Captain Anderson describes the town of Amcenghur, through which this proposed road would pass, as a bazar of export,—as a great mart for Concan produce, and a large cattle market. At this place also, he adds in the same paragraph, reside several wealthy sowcars through whose hands most of the cotton grown in the district, deducting what is retained for home consumption, finds its way to the coast. These facts point to the propriety of connecting Hoongoond by way of this town, as already proposed, with Bagulkote, from which made-roads lead to the coast at Vingorla and Wagotun.

❦

41. Captain Wingate in his 12th and Captain Anderson in his 32nd paragraph advocate the construction of a road to the Tullehwarree ghaut in order that increased facilities may be given to the trade with Goa. There is not a single engineering difficulty to prevent the construction of such a road; but the policy of enriching Goa at the expense of British ports is not very obvious. So long ago as 1843 (*vide* report of Revenue Commissioner for the Northern Division, No. 1654, dated 14th June 1851, concurred in by Government in Mr. Secretary Lumsden's letter to the Collector of Belgaum, No. 2739, dated 4th July 1851) it was decided that in the present condition of the Goa administration it would be a hazardous experiment to turn the channel of our southern trade into a foreign state, which might burden it at pleasure with arbitrary restrictions which might be discovered to end in the sacrifice of British property too late to prevent the ruin of Vingorla. Captain Anderson further in his 33rd paragraph advocates, as tending greatly to increase the trade, the abolition of existing duties on the export of produce and manufactures from the British dominions into Goa by land. As these duties are eventually repaid to the exporter by the consumers, who are Goa subjects, it seems to be unnecessary for the British government to forego its duties in order that the Goanese may benefit.

But although I see no necessity for giving to Goa facilities for withdrawing trade from British ports, yet I look upon the internal communications between Kittoor and Beedec, authorized in the letter (No. 4607 of 1852) already quoted, and between Belgaum and Hullihal *via* Khanapoor and Nundighur, yet to be sanctioned, as of the greatest importance, calculated as these roads are to open the Beedee talooka to the Belgaum market, from which it is at present almost altogether excluded. The Beedee talooka, from its excellence of soil and never-failing supply of water, is a most improvable district, and this improvement can, I think, be most beneficially effected by giving it access to the Belgaum market.

42. The irruptions into the Hoongoond district by subjects of His Highness the Nizam (referred to by Captain Wingate in his 13th and by Captain Anderson in his 34th paragraph) were reported to Government by the Magistrate in his letter No. 262, dated 22nd June 1850, and the circumstance of reparation not having yet been

made, was again brought by the Magistrate to the notice of the Resident at Hyderabad in his letter No. 252, dated 23rd May 1853. The border country of His Highness the Nizam's western frontier being now under the administration of British officers, a repetition of these outrages will probably not occur, but reparation for the past still remains to be afforded.

43. I entirely agree in the opinion expressed in Captain Wingate's 14th paragraph—that it is unnecessary to order a special survey of Uthnee, or any of the districts now reported on by Captain Anderson, with a view to ascertaining their capabilities for irrigation, seeing that the means for this within themselves are not of sufficient magnitude to engage the attention of a government, although individual enterprize might be well repaid in expending moderate sums in damming up small streams for purposes of local irrigation.

44. Apologizing for the length to which this letter has extended.

I have the honour to be, &c.

J. D. INVERARITY,  
Collector.

*Belgaum, Collector's Office, 30th September 1853.*

*Translation of a Report (No. 116, dated the 24th September 1853)  
submitted to J. D. INVERARITY, Esq., Collector of Belgaum, by  
PANDOORUNG RAMCHUNDUR, Mamlutdar of Hoongoond Talooka.*

I received your honour's order No. 99, dated 6th September 1853, stating that you had learnt that ryots were persuaded to give up their fields without their full consent, and that the same were made over to shetsundees in remuneration of service, and directing me to name the ryots who had cultivated fields and paid rents the time of their occupancy, and the manner of their resignation of them. In reply I beg to forward with this report two statements—one having reference to the talooka, and the other to the mahal—showing the fields under cultivation which have been given to shetsundees to make up their remuneration, and to state that no ryots were persuaded to resign the fields they cultivated against their will in favour of shetsundees. Fields which ryots of their own accord, or the parents and brothers of shetsundees resigned were alone given to shetsundees

PANDOORUNG RAMCHUNDER,  
Hoongoond Mamlutdar.

(True translation)

J. D. INVERARITY,  
Collector.

# MAMLUTDAR'S DIVISION.

STATEMENT of Assignments of Land made to SHETSUNDEES for service in the District of HOONGOOND of the BELGAUM COLLECTORATE, as per the Magistrate's (Mr. INVERARITY'S) order No. 18, dated 3rd March 1853.

Names of Villages.	Number.	Names of Shetsundees.	Number of Fields.	Acres.	Amount of Assessment.	REMARKS.
					Rs. a. p.	
CUSEBA NAGOOB .....	1	Sunguppa bin Ninguppa Gorarkur	60	0 20 0	0 4 0	The land being held by the shetsundee himself was added to his "service enam" to make up his remuneration.
			29	1 8 0	2 8 0	
			30	0 20 0	1 0 0	
			2	2 8 0	3 12 0	
			87	5 3 0	3 0 0	
GHUTEERGEENOOR ..	1	Sedda bin Sukureppa.....				Do. do. do.
WUDER GONHAL ..	1	Juma bin Kureeyunna .....	4	16 36 0	8 0 0	Do. do. do.
CUSEBA MAGEE .....	1	Bylla bin Hummunta Alludinnee.	118	11 22 0	8 0 0	Do. do. do.
	2	Balluppa bin Bussappa .....	12	12 25 0	7 0 0	Do. do. do.
			2	24 7 0	15 0 0	
RANTHUL .....	1	Alluppa bin Suntummuppa .....	17	23 4 0	13 0 0	Do. do. do.
	2	Alluppa bin Kurkuppa .....	58	16 11 0	10 0 0	Do. do. do.
	3	Gopalla bin Sukreppa .....	32	22 11 0	15 0 0	Do. do. do.
			3	61 26 0	38 0 0	

MOUJE GUNGOOR ..	1 Tummunna bin Teerkuppa .....	119	21	27	0	9	0	0	Do.	do.
	2 Bheemunna bin Lenkuppa Khy- rundgee .....	20	14	38	0	7	0	0	Do.	do.
	3 Meeya wulud Allee .....	84	29	27	0	15	0	0	Do.	do.
CUBBA MURUL ....	3	66	12	0	31	0	0	0	Do.	do.
	1 Rama bin Busuppa, doing duty for Yelluppa .....	125	27	18	0	16	0	0	Do.	do.
	2 Mulleeka bin Alleresab .....	19	10	17	0	6	4	0	Do.	do.
MOUJE ANNUPKUT- TEE.	162	12	20	0	8	0	0	0	Do.	do.
	2	50	15	0	30	4	0	0	Do.	do.
	43	14	22	0	8	0	0	0	Do.	do.
" AYHOLEE ..	1 Ramuppa bin Budappa Kooree	167	10	19	0	6	0	0	Do.	do.
" KULLEGGOOD.	1 Bheemunna bin Dessae .....	70	9	5	0	6	0	0	Do.	do.
" DHUNNOOR..	1 Mookunna bin Yelluppa .....	22	9	6	0	3	8	0	Do.	do.
CUBBA CHICKUNHALL	1 Devuppa bin Royuppa .....	10	1	18	0	1	0	0	Do.	do.
MOUJE HEERA YE- RUNKIRREE.	1 Nubee bin Futtisab .....	32	6	0	0	3	4	0	Do.	do.
" CHICK YERUN- KERREE.	1 Yella bin Balla Chitwadgee .....	6	6	25	0	3	0	0	Do.	do.
" SOOLEBHAYEE .	1 Amatee bin Sidappa Kudulmetee.	195	29	20	0	20	0	0	Do.	do.
" KUTKOOR ....	1 Sunga bin Somunna .....	38	6	21	0	4	4	0	Do.	do.
" BUSREKUTTEE	1 Nursinga bin Bhurmunna .....	36	22	24	0	10	0	0	Do.	do.

Names of Villages.	Number.	Names of Shetsundees.	Number of Fields.	Acres.	Amount of Assessment.	REMARKS.
CUSBBA KUMUTGEE ..	1	Timuval bin Kenchuppa Goo- reekur .....	38	11 20 0	Rs. a. p. 6 0 0	<p>{ The land being held by the shetsundee himself was added to his "service enam" to make up his remuneration.</p> <p>} Do. do. do.</p> <p>Do. do. do.</p>
	2	Emam wulud Jufree .....	118 145	6 13 0 6 36 0	4 0 0 2 0 0	
			2	13 9 0	6 0 0	
	3	Sidduppa bin Kotuluppa .....	54	5 32 0	0 12 0	
			4	30 21 0	12 12 0	
CUSBBA KEELOOR.....	1	Moodkuppa bin Neeluppa.....	126	19 7 0	11 0 0	<p>Of this No., 7 acres 33 goontas, assessment Rs. 4-8, were held by the shetsundee himself, the remaining portion (11 acres 24 goontas, assessment Rs. 4) being given to Juma bin Sivnuppa Shetsundee for service in 1261 Fuslee. Subsequent orders disallowed assignments of portions of fields to shetsundees, wherefore Juma resigned his part to Moodkuppa.</p>

CUSEBA SUGUM . . .	1	Dustagiree deceased, Sunguppa bin Beesatee doing duty during the minority of the deceased's son.	150	21	29	0	12	0	0	This field being cultivated by the shetsundee himself was assigned to him to make up his remuneration.
	2	Bheema bin Ninguppa . . . . .	149	13	14	0	8	0	0	Of this No., 6 acres 27 goon-tas (assessment Rs. 4) were held by the shetsundee himself, and the remaining portion by Sunguppa bin Bhurumpa for four years, from 1258 Fuslee. In 1262 Fuslee the latter of his own accord resigned his portion, which was therefore made over to the former.
			2	35	3	0	20	0	0	
			29	427	18	0	237	12	0	

PANDOORUNG RAMCHUNDUR,  
Probationary Mamlutdar.

(True translation)

J. D. INVERARITY,  
Collector.



# ILKUL MAHALKURREE'S DIVISION.

**STATEMENT of Assignments of Land made to POLICE SHETSUNDEES for service in the District of Hoonsoond of the BELGAUM COLLECTORATE, prepared as per order from the Collector, No. 99, dated 6th September 1853.**

Names of Villages.	Number.	Names of Shetsundees.	Number of Fields.	Acres.	Amount of Assessment.	REMARKS.
CHIK ADAPOOR ....	1	Hooshenee wulud Mhumuduppa absconded. In his room his eldest brother Bushia wulud Mhumuduppa.	50	17 21 0	Rs. a. p. 10 0 0	This land was held for three years (i.e. from 1259 to 1261 Fuslee) by one Mannyah Bhiruijee, a riot, who at the survey jummaabundee in 1262 Fuslee resigned it, declaring his inability to cultivate it any longer. It was made over to the shetsundee for service.
MOUJE PALTHEE ..	1	Bhima wulud Geerjupa dismissed. In his room Bussapa wulud Sunguppa.	26	14 37 0	9 0 0	This land was held by the shetsundee's brother up to 1262 Fuslee, in which year he stated his willingness to transfer it to his brother (the shetsundee) for service. This was done accordingly, and no persuasion was used in this case.

CUSEA KURDEE . . . .	1	Boodunia wulud Feeruppa . . .	218	15	5	0	10	0	0	This field was cultivated for five years (i. e. from 1256 to 1260 Fuslee) by Chidamburapa Koolkurnee, and was resigned by him of his own accord in 1261 Fuslee. It was assigned to the shetsundee for service. No persuasion was used.
	2	Tunmua bin Genuppa . . . . .	242	30	18	0	18	0	0	This field was held by Goor-nath Shenkur Koolkurnee from 1256 to 1260 Fuslee, and was resigned in the following year. It was made over to the shetsundee for service. No persuasion was used in this case.
	3	Sivunna bin Sabunna Koorbur . .	306	23	38	0	15	0	0	This land was held by the shetsundee himself, and was therefore assigned to him for his services.
			3	69	21	0	43	0	0.	
CUSEA NUNDWADJEE.	1	Fureeda bin Hoochuppa . . . . .	27	8	36	0	5	0	0	This land was held for six years (from 1256 to 1260 Fuslee) by Oosman bin Hoochuppa, who of his own accord gave in his resignation this year. It was made over to the shetsundee for service. No persuasion was used in this case.

Names of Villages.	Number.	Names of Shetsundees.	Number of Villages.	Acres.	Amount of Assessment.	REMARKS.
MOUJE HEKWARD- GEE .....	1	Balappa bin Heereyunna.....	30	18 27 0	Rs. a. p. 12 0 0	This land was held by the shetsundee's father from 1250 to 1260 Fuslee. The party of his own consent resigned it in favour of his son (the shetsundee). No persuasion was used.
	2	Budappa bin Sunjeeva Kooree..	7	14 36 0	9 0 0	The party himself held this land for two years (1259 and 1260); the same was assigned to him for service.
NEELUVGUL .....	1	Eeruppa bin Balappa Sondoor ..	..	32 1 0	20 0 0	This land being held by the party was assigned to him in service.

SREENEWAS RUNGO,

Probationary Mahalkurree.

PANDORUNG RAMCHUNDUR,

Probationary Mamlutdar.

(True translation)

J. D. INVERARITY,

Collector.

No. 767 of 1853.

From J. D. INVERARITY, Esq.,  
Collector of Belgaum,\*

To W. COURTNEY, Esq.,  
Revenue Commissioner, S. D.

SIR,—With reference to the concluding part of paragraph 37 of my letter No. 727, dated 30th ultimo, I have the honour to submit copy of Captain Wingate's letter (No. 641, dated 13th ultimo) therein quoted, and with it copies of Mr. Forjett's reports (No. 111, dated 30th ultimo, and No. 113, dated 14th instant), with accompanying translation of statements made by ten of the principal inhabitants of Yedralee, from which it will be seen that the inconveniences imagined by Captain Wingate to the villagers of Yedralee from surrounding their village with a fence have never had any existence.

I have the honour to be, &c.

J. D. INVERARITY,  
Collector.

*Belgaum, Collector's Office, 17th October 1853.*

No. 641 of 1853.

From Captain G. WINGATE,  
Revenue Survey Commissioner,

To J. D. INVERARITY, Esq.,  
Collector of Belgaum.

SIR,—In reply to your letter No. 674, dated 8th instant, I have the honour to inform you that the name of the village alluded to in the 15th paragraph of my letter No. 577, dated 24th ultimo, is Yedralee, which lies, I think, immediately south of the fort of Purrusghur. I noticed the fence when visiting the fort of Purrusghur in March 1850. The statement in the 15th paragraph of my report was written from recollection, and may not be exactly correct as to the position of the single opening and the tank, as, on referring to my note-book, I find the following remarks (written at the time), which make me now think that the detour referred to a well on the hill-side and not to the tank.

There is a curious “well or tank under the cliff at the Purrusghur fort on which the inhabitants of Yedralee (a village below) are dependent for water throughout the hot weather. It is a stiff pull up the hill, and Mr. Forjett has considerably increased the labour of obtaining water to the villagers by the hedge he has placed round their village, and only allowing them to get out by one opening, which requires them to make a considerable detour.”

I have the honour, to be &c.

G. WINGATE,  
Revenue Survey Commissioner.

*Camp Poona, 13th September 1853.*

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## No. 111 OF 1853.

The Superintendent of Police begs to submit the accompanying sketch of a bird's eye-view of the village of Yedraivee, in the Purruoghur talooka, and the tank alluded to by Captain Wingate.

2. The distance of the tank from the two gates of the village is 220 yards from one and 188 yards from the other, as marked in the sketch.

3. The statement of ten of the principal inhabitants of the village is herewith appended, from which it will appear that during a year of the most favourable monsoon the water in the tank lasts for only eight months, and that generally it dries up in five or six months, after which the inhabitants have to procure water for household purposes from the spot marked A, which is at a distance of about half a mile from the village, and the ascent to it about 300 feet, and that during such scarcity they take their cattle to water to a well beyond the village of Bedsoor. It will also appear from the said statement that the two outlets now belonging to the village have been the "mamool" outlets, through which, with the exception of the people of four or five houses in the village next to the tank, all the inhabitants have always gone to the tank for water, and that the people of the four or five houses above mentioned, previous to the hedging and walling-in of the village, took advantage of a "chor rusta" to fetch water from the tank.

C. FORJETT,

*Sumpgaum, 30th September 1853.*

Superintendent of Police.

*N.B.*—With reference to the 2nd paragraph of Captain Wingate's letter No. 641, dated 13th ultimo (put into his hands by the Magistrate this morning), the Superintendent begs to state it will be seen from the statement of the inhabitants already alluded to that the two openings at present belonging to the village have all along been the only ones in use by the people of the village for fetching water from the well marked A on the sketch, being the one alluded to by Captain Wingate.

C. FORJETT,

*Belgaum, 4th October 1853.*

Superintendent of Police.

No. 113 of 1853.

The Superintendent begs to submit a translation of the Canarese statement made to him by the ten principal inhabitants of the village of Yedralee, as already stated, and of that made to the mamlutdar by them subsequently, from which it will appear that there was no direct opening from the village to the well A before the police arrangement of enclosing the village took place.

2. The above statement and the mamlutdar's report are also herewith submitted.

*Belgaum, 14th October 1853.*

C. FORJETT,  
Superintendent of Police.

(True copies)

J. D. INVERARITY,  
Collector.

*Translation of the Questions to, and the Answers of the following principal Inhabitants of the Village of Yedralee of the Purrusghur Talooka :—*

Balappa bin Chinappa Kugdal.  
Shivrooda bin Balappa Goolchee.  
Purrappa bin Mooshupgowda.  
Goorshidappa bin Rachiappa.  
Roodroogowda bin Mooshupgowda.  
Vittul Venkajee Koolkurnee.  
Dewan Saib wulud Hoosen Saib.  
Eeria bin Lingia Votnal.  
Balua bin Awona.  
Shetia bin Lingana Busurgee.

QUESTION BY THE SUPERINTENDENT OF POLICE, DATED  
9TH SEPTEMBER 1853.

*Question.*—How long does the water in your tank last; and after the tank dries up, whence do you obtain water? How many openings have there been all along to your village, and how many to proceed to the tank to fetch water?

*Answer.*—During a year of much rain the water in the tank lasts for about seven months, and in the event of *very* much rain it lasts at the very outside for about eight months. During a year of middling rain the water lasts for about five or six months. After the tank dries up we fetch our water from the well under the cliff at the Purrusghur fort, and take our cattle to a well the other side of the village of Bedsoor (about half a koss from this) to water. There have been all along, as at present, only two openings to the village through which the water from the tank was, as is now done, brought into the village. Before the police arrangements took place, from there having been neither wall nor hedge around the village, there were some “kulhadee” (surreptitious pathways) through one of which, which was near the compound of the koolkurnee, the people of about four or five houses obtained their water from the tank, and the rest of the inhabitants went through the present two gates for it, besides which there was no other opening to the tank.

[Here follow the signatures of the ten above-named inhabitants, and the attestation of two witnesses].

QUESTION BY THE MAMLUTDAR, DATED 7TH OCTOBER 1853.

*Question.*—Previous to the police arrangements made by Mr. Forjett, how many openings were there to the village to fetch water from the well under the cliff?

*Answer.*—The two openings now belonging to the village were the only ones all along belonging to it, and through them the water from the well was brought. There was never any other opening.

[Here follow the signatures of ten inhabitants, and the attestation of two witnesses].

(True translation)

C. FORJETT,  
Superintendent of Police.

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No. 277 of 1854.

TERRITORIAL DEPARTMENT,—REVENUE.  
"

From II. W. REEVES, Esq.,  
Acting Revenue Commissioner, S. D.,

To H. E. GOLDSMID, Esq.,  
Secretary to Government, Bombay.

SIR,—I have honour to submit for the consideration of the Right Honourable the Governor in Council a report from Captain W. C. Anderson, Superintendent of Revenue Survey in the Southern Maratha Country, containing an account of his proceedings in introducing new rates into Hoongoond, also 53 villages of the Uthnee district, and 19 villages of the Yadwar mahal, all of which are situated in the Belgaum collectorate. This report is accompanied by letters, as per margin, from Captain Wingate, late Revenue Survey Commissioner, and Mr. Inverarity, Collector of Belgaum.

No. 267, dated 26th July 1853.

No. 577, dated 24th August 1853.

No. 727, dated 30th September 1853.

2. Captain Anderson's report is clear and detailed. Captain Wingate's remarks on it will be read by Government with the interest which everything coming from so able a man is entitled to; and the review of Mr. Inverarity is so complete that, as regards the operations reported on, and their result, nothing is left for me to explain.

3. The necessity for a reduction in the rates in the three districts named is fully discussed by Captain Anderson; and from a personal observation I am able to add my opinion to those of Captain Wingate and Mr. Inverarity—that the new rates which have been in-

produced are adapted to the wants of the people. The maximum dry-crop rates are as follows :—

	FIRST CLASS.				SECOND CLASS.		
	Rs.	a.	p.		Rs.	a.	p.
Hoongoond.....	1	0	0	....	0	14	0
Uthnee .....	0	14	0	....	0	12	0
Yadwar .....	0	14	0	....			

which, it will be seen, have been accommodated to the rates previously introduced into adjoining districts similarly circumstanced as to climate, markets, &c.

4. The bhagaet lands of these divisions are insignificant in extent.

In Hoongoond they include only 309 acres.

In Uthnee do. do. 853 „

In Yadwar do. do. 4 „

The rates for this description of cultivation have been reduced from an average of Rs. 2-5 per acre, in the case of Hoongoond, to Rs. 1-8-8, the maximum rate in any single instance being Rs. 2-2 per acre. In the case of Uthnee the average rate of Rs. 1-5-4 per acre has been reduced to an average of Rs. 1-4-3, the maximum being Rs. 1-12 per acre; the assessment of the four acres in Yadwar Rs. 1-4 per acre.

5. In Hoongoond there are some rice lands, in extent 454 acres, which paid formerly an average assessment of Rs. 1-15-3. The new assessment is Rs. 1-12-4.

6. The reduction of assessment on land in cultivation is greater in the 1st than in the 2nd class of villages in Hoongoond as well as in Uthnee. In the former district it will be seen to be about 28 per cent 1st class and 14 per cent 2nd class, and in the latter about 18 $\frac{3}{4}$  per cent 1st class and 9 per cent 2nd class. In Yadwar there is a reduction of about 7 $\frac{1}{2}$  per cent.

7. But in each of these three districts it is shown by Captain Anderson that in addition to the great object of promoting the prosperity of the people, the reduced rates will have the effect of maintaining the average of past years' collections, while it is evident that they afford to Government the surest and safest means of increasing the revenue.

8. Some opinion may be formed of the financial results of the revenue survey from the following statement :—

Name of District.	No. of Villages.	Total extent of Land.	Unarable area.	Arable area.	Cultivated Acres according to the Survey.	Assessment of the Land in Column 6 according to the Old Rates.		Assessment of the Land in Column 6 according to the Survey Rates.		Average Annual Collections during the British rule and prior to the Survey (for all tenures).	Government Collections only.	Survey Assessment in 1851-52.
						Amount.	Rate per Acre.	Amount.	Rate per Acre.			
1	2	3	4	5	6	7	8	9	10	11	12	13
		Acres.	Acres.	Acres.	Acres.	Rs.	Rs.n.p.	Rs.	Rs.n.p.	Rs.	Rs.	Rs.
Hoongoond	142	278,316	38,222	240,088	108,682	81,329	0 12 0	64,011	0 9 5	85,480	69,842	64,043
Uthnee ..	53	335,454	51,154	284,300	116,994	72,624	0 8 6	47,334	0 6 6	76,571	58,619	47,334
Yadwar ..	10	37,846	3,466	34,380	13,202	7,069	0 9 3	6,593	0 8 0	17,120	7,478	6,593

9. With regard to the observations of Captain Wingate on the past management of Uthnee and Yadwar, Paragraphs 5 to 7. I venture to state, after several years' acquaintance with the management of landholders of the Southern Maratha Country, that there is no greater mistake than that into which many persons have fallen—of contrasting Government villages unfavourably with those of landholders. I have had several years of personal acquaintance with the revenue management of the jagheerdars and enamdars of the Southern Maratha Country, and I very confidently assert that the alienated villages there will bear no comparison with those belonging to Government in any single particular. The ryots of the latter are in much better circumstances, and considerably happier, than those of the former. The depressed condition of the jagheer villages of the Southern Maratha Country is become proverbial, and this, when the embarrassed condition of the chiefs is considered, together with the reckless means adopted by them to raise money under the farming system, cannot be a matter of surprise. The political records abound with remarks on the mismanagement of these estates, and it is in consequence of this misrule

that Government have received Gokak in a state of extreme poverty from the Chinchnee Patwurdhun; Yadwar in a still worse condition from the Tasgaum Patwurdhun, and Uthnee half depopulated from Appa Dessae Nepaneckur. The system of farming out mahals and villages to their creditors is that to which I allude as pursued by most landholders. This having been put an end to, and the assessment having been fixed for a period of thirty years at a rate calculated to enable the ryot to realize a fair profit on his holding, all cesses having also been abolished, a solid basis has been laid for improvement, and we may now look forward with confidence to witnessing in the course of a few years a considerable change for the better in the condition of the districts to which these remarks refer.

10. Captain Wingate differs from Mr. Inverarity on the subject of the assignments of land to shetsundees, considering that a cash-payment is the preferable mode of remuneration. Captain Anderson concurs in this opinion. I have already in the magisterial department recorded my own opinion on this question on the same side as that of these two officers. The point having been definitely settled by Government, need not be reopened.

11. The difficulty alluded to by Captain Anderson in his 29th paragraph, and commented upon by Captain Wingate in his 11th paragraph, has been met by Mr. Inverarity, who has followed the course pointed out by those two officers. Mr. Inverarity in the 34th paragraph of his letter No 727 observes—

“The course indicated by Captain Wingate, viz. that of treating these holdings exactly as those of other ryots, has invariably been pursued by me, and on all occasions inculcated upon my subordinates. Indeed so fully am I impressed with the importance of maintaining the survey settlements in all their integrity, that it is my intention—as I long ago intimated to Captain Anderson—so soon as the shetsundee assignments have been completed, to submit to Government a proposition to enter all their lands as khalsat instead of service enam, and to exhibit in the annual accounts, as a remission in remuneration of service, the assessed value of the lands so appropriated.”

12. Mr. Inverarity states that a practice, noticed by Captain Anderson, of transferring land from a ryot to a shetsundee by

“sumjoot” persuasion has always been discountenanced by him, and has been denied by the mamlutdar of Hoongoond, in whose district it is said by Captain Anderson to have existed.

13. Another question discussed in these letters is that of the “walls and hedges” by which the villages of the Belgaum collectorate have during the last few years been surrounded. The object of this measure is the security of the inhabitants of the villages from robbers. Captains Wingate and Anderson consider that this security is too dearly purchased by the inconveniences attending the means by which it is brought about, and that cholera is fostered by the want of ventilation produced. Mr. Inverarity maintains the contrary. He says that the walls and hedges are necessary; that they are so regarded by the people, and that cholera is by no means increased by them. I am inclined to concur with Mr. Inverarity in the opinion which he has expressed with regard to the advantage resulting from the construction of these defences, viewing them as auxiliary to the good police management of the zilla; but I am not satisfied that cholera may not be maintained by the want of ventilation, and the increased heat which they cannot fail to occasion.

14. That Mr. Inverarity will spare no pains to promote the improvement of the districts reported on, Government does not require to be told. He has it in contemplation to submit a proposal for extensive irrigation from the large old tank at Honwad—a work which, if Government find it convenient to restore, will, I am of opinion, be the means of restoring the prosperity of the desolate village on its banks.

15. Mr. Inverarity considers that his First Assistant ought to be able to superintend the construction of the road from Bagulkote to Hoongoond. This work appears to me of great importance, and I have no doubt the Right Honourable the Governor will be of the same opinion. It will connect Hoongoond with the coast *via* the Phonda ghaut.

16. The road down the Tullywarree ghaut from Belgaum was formerly proposed by myself, but negatived by Government on account of Mr. Shaw’s advice. I do not concur in the reasoning of Mr. Shaw, which has received, I observe, the support of Mr. Inverarity, and I consider that there is no chance whatever of the Goa government withdrawing any trade from British ports or territories.

17. The construction of roads in Beedee is, as Mr. Inverarity

justly remarks, of the utmost importance. The soil of that district is rich, and water is most abundant. Its extensive forests contain timber already extensively used, but much more, perhaps, of a valuable kind than we yet know of, while the inhabitants stand in the utmost need of increased facilities for intercommunication. At present also this district is almost shut out, so far as cart traffic is concerned, from the surrounding country; yet the Bedee jungles are annually filled with the cattle from even Bagulkote, Badamee, and Hoongoond, which during the hot weather are sent there to feed and regain strength.

18. I quite agree in the opinion expressed by Mr. Inverarity at the conclusion of his report, concurred in by Captain Wingate, that there is no call for any special survey of the Uthnee district with the view of promoting irrigation.

19. I beg to attract the attention of Government to Mr. Inverarity's 42nd paragraph, stating that the orders of the Most Noble the Governor General have not yet had the effect of procuring for certain inhabitants of Hoongoond frontier villages reparation for the injuries inflicted upon them by subjects of His Highness the Nizam, as represented by the Magistrate of Belgaum in his letter to the Chief Secretary, No. 262, dated 22nd June 1840.

20. I beg in conclusion to recommend for sanction the details of Captain Anderson's settlement, and further, that the assessment be guaranteed for thirty years.

I have the honour to be, &c.

H. W. REEVES,

Acting Revenue Commissioner, S. D.

*Nassick Districts, Camp Warreewarra, 23rd January 1854.*

No. 277 OF 1854.

From the ACTING REVENUE COMMISSIONER, S. D.

Submitting for the consideration of Government a report from the Superintendent of Revenue Survey in the Southern Maratha Country, containing an account of his proceedings in introducing new rates in Hoongoond, also fifty-three villages in the Uthnee district, and nineteen villages in the Yadwar mahal, all in the Belgaum collectorate.

*Dated 23rd January 1854.*

**RESOLUTION by the HONOURABLE BOARD, dated 7th September 1855.**

The following papers have been placed before the Right Honourable the Governor in Council for disposal:—

Letter, dated 26th July 1853, No. 267, from the Superintendent of Revenue Survey and Assessment Southern Maratha Country to the Revenue Survey Commissioner, relative to the introduction of the revised assessment into the Hoon-goond talooka, into fifty-three villages of Uthnee, and ten villages forming the Yadwar division of the Gokak talooka of the Belgaum collectorate.

Letter, dated 24th August 1853, No. 577, from the Revenue Survey Commissioner to the Collector of Belgaum, submitting the above letter.

Letter, dated 30th September 1853, No. 727, from the Collector of Belgaum to the Revenue Commissioner of the Southern Division, handing up the above communications from the Superintendent of the Revenue Survey and Assessment in the Southern Maratha Country and the Revenue Survey Commissioner.

Letter, dated 17th October 1853, No. 767, from the Collector of Belgaum to the Revenue Commissioner Southern Division, submitting copy of Captain Wingate's letter No. 641, dated 13th September 1853, and of reports by the Superintendent of Police, with enclosure, relative to alleged inconvenience to the villagers of Yedranee from their village being surrounded with a fence.

Letter, dated 23rd January 1854, No. 277, from the Acting Revenue Commissioner of the Southern Division to the Secretary to Government, submitting the preceding communications from the Superintendent of Revenue Survey and Assessment Southern Maratha Country, the Revenue Survey Commissioner, and the Collector of Belgaum.

2. The survey operations of the districts under report were nearly completed when Captain Anderson's predecessor, Captain Wingate, was at the head of the Southern Maratha Country Revenue Survey Department.

Paragraph 2 of Captain Anderson's report.

Paragraph 2 of Captain Wingate's letter.

3. On the 13th February 1852 the latter officer, as Survey Commissioner, applied for permission to introduce the revised assessment without incurring the delay which would be entailed by Captain Anderson previously preparing and sending through the usual channels to Government a detailed report. He promised, however, that such a report should be made after the settlement was effected.

4. Captain Wingate explained that the Collector's field inspection for the then current year had been made by the village and district officers in anticipation of the annual settlement being based on the survey operations, and that the ryots had been led to believe they would receive the benefit of that settlement.

5. Captain Wingate also represented that although his papers were not in a sufficient state of forwardness to enable him to submit the usual report, he had been able to settle the rates for Hoongoond definitively, and for the other districts approximately.

6. Captain Wingate's application was supported by the Collector\*

\* Dated 24th Feb. 1852, No. 128.

† Dated 27th Feb. 1852, No. 443.

‡ Dated 23rd March 1852, No 1916.

and Revenue Commissioner† and complied with by Government.‡

7. The returns which Captain Anderson has given in his report in illustration of the degree of accuracy with which the preliminary field operations of measurement and classification were executed do not correspond with those furnished in the progress reports for the years 1848-49 to 1851-52. § As regards Uthnee and Yadwar, this is probably owing to the present returns including operations in fewer villages than those embraced in the progress reports; but as the present papers relate to the whole of the Hoon-goond talooka, Government are unable to understand how any discrepancy has arisen between the two sets of returns as regards the number of fields subjected to test, the result of test, and the names of officers whose work was subjected to test.

§ See reports submitted with the Revenue Commissioner's (Southern Division) letters dated 13th May 1850 (No. 2412), 12th July 1851 (No. 2699), 25th August 1852 (No. 2063), & 29th Aug. 1853 (No. 2265).

8. The rates of assessment imposed on the lands of the villages

Paragraphs 17 to 28 of Captain Anderson's report.

which have been subjected to the settlement, as also the results of those rates, are



clearly exhibited by Captain Anderson in his figured statements and diagrams.

9. As regards Hoongoond, Government by no means regret that  
 Paragraph 26 of Captain Anderson's report. "the reaction which has been very generally found after a short lapse of time to follow the introduction of the revised rates occurred in the district of Hoon-goond somewhat earlier than usual."

10. It appears that in Hoongoond, as is usual in other districts subjected, or about to be subjected, to a survey assessment, the ryots took up more land than they had the means of cultivating with advantage. The sooner such ryots abandon a portion, the better for themselves and for the public revenue.

11. Government observe that Captain\* Anderson assigns as an-  
 Paragraph 26 of Captain Anderson's report. other cause of reaction that "those who took up land on speculation or to secure a selection and have held it at a loss since 1845-46, now that the assessment of every field is known, have kept what they think will prove profitable and resigned the remainder."

12. It is not improbable that there may have been jobbing on the part of the village officers and influential ryots, and His Lordship in Council fears that such cannot be prevented in districts which are situated sufficiently near to others whose assessment has been revised for the people to know what advantages will result to them from obtaining, previous to the introduction of the revised assessment, possession of land that has hitherto been valueless in consequence of the oppressive assessment imposed thereon.

13. Government concur in opinion with the Revenue Commis-  
 Revenue Commissioner's 10th and 12th paragraphs. sioner and Captains Wingate and Ander-  
 Collector's 34th and 35th paragraphs. son—that cash-payments to shetsundees  
 Captain Wingate's 10th and 11th paragraphs. constitute a preferable mode of remunera-  
 Captain Anderson's 29th and 30th paragraphs. tion to the assignment of lands, and direct  
 of the district authorities gradually to  
 remove these difficulties, and to substitute on every available oppor-  
 tunity money-payments for lands. Considerable caution should,  
 however, be exercised in introducing this change, which should be

effected in conjunction with the magisterial authorities, and under the supervision of the Commissioner of Police.

14. The Revenue Commissioner and Collector are in favour of the construction of walls and hedges around villages, inasmuch as they afford security to the inhabitants from robbers; whilst Captains Wingate and Anderson are opposed to it, on the grounds of the ill effects in a sanitary point of view, and other inconveniences, resulting from it. Government concur with the former officers, and think that by greater attention to cleanliness, and by making as many openings in the hedges as will admit of free ventilation, and also afford means of ingress and egress to the villagers, the objections raised by Captains Wingate and Anderson will be removed.

Revenue Commissioner's 13th paragraph.

Collector's 38th and 39th paragraphs.

Captain Wingate's 15th paragraph.

Captain Anderson's 62nd paragraph.

Revenue Commissioner's 15th to 17th paragraphs.

Collector's 40th and 41st paragraphs.

Captain Wingate's 12th paragraph.

Captain Anderson's 31st and 32nd paragraphs.

15. The instructions of Government on the subject of the paragraphs noted in the margin were communicated to the Revenue Commissioner in Mr. Acting Secretary Tytler's letter from the General Department, No. 2677, dated the 22nd August 1854.

16. Government admit the force of what is urged by Captain W. C. Anderson in his 33rd paragraph, relative to the effect produced by the exaction of export duties on the produce and manufactures of the British territory conveyed over the Goa frontier, and a reference on the subject will therefore be made to the Government of India.

Revenue Commissioner's 16th paragraph.

Collector's 41st paragraph.

Captain Anderson's 33rd paragraph.

17. On the 21st May 1853 a new treaty was entered into by the British Government with His Highness the Nizam, which was ratified by the Most Noble the Governor General of India in Council on the 18th June 1853. By this treaty British relations with that state have been placed on a footing which it

Revenue Commissioner's 19th paragraph.

Collector's 42nd paragraph.

Captain Wingate's 13th paragraph.

Captain Anderson's 34th paragraph.

may be expected will prevent a recurrence of similar grounds of complaint to those mentioned in paragraph 34 of the report by the

\* Government memorandum No. 2578, dated 18th June 1855, to the Resident at Hyderabad.

Letter from ditto No. 445, dated 18th July 1855, with accompaniment.

Superintendent, who should be furnished with copy of the correspondence \* which has taken place with the Resident at Hyderabad on the subject, and informed that the result of the inquiry it is proposed to institute will be communicated to Captain

Anderson as soon as it is made known to this Government.

18. A survey of the rivers in the Southern Maratha Country, with a view to the construction of works of irrigation in the Belgaum collectorate, was sanctioned by Government orders dated 3rd November 1852 and 6th July 1853, Nos. 7139 and 3894. Extracts of paragraph 61 of Captain W. C. Anderson's report, and paragraph 14 of Captain Wingate's, may be sent to the Chief Engineer of Public Works, who should be requested to ascertain and report what progress has been made in this survey.

19. The information given in paragraph 63 of Captain W. C. Anderson's report, relative to the conservation of certain koorun lands in Uthnee for growth of grass and trees, is satisfactory, and will be communicated to the Forest Conservator.

20. The account given by Captain W. C. Anderson of the past revenue management of the three districts in which the revised assessment has been introduced has occasioned Government much regret.

21. The account given by Captain W. C. Anderson of the circumstances of the three districts (of the state of past collections, and the immediate and possible results of his new settlement) is so clear and concise as to render it unnecessary that they should be summed up by Government. The reductions which Captain Wingate made were evidently necessary to the prosperity of the people, and are therefore unhesitatingly sanctioned by Government.

22. The Governor in Council is gratified to learn, as regards Hoongoond, that Captain Wingate \* feels "satisfied that in a very few years the revenue of this district will rise and con-

\* See paragraph 8 of his letter.

tinue above the average of past collections," and it will afford him much satisfaction to learn that the people of Uthnee and Yadwar prosper under the revised assessment and an improved system of revenue management.

23. The details of Captain Anderson's settlement, as described in his report, are sanctioned, and Government authorize the assessment, being guaranteed for thirty years, as recommended by Captain Wingate and the Revenue Commissioner.

Revenue Commissioner's 20th paragraph.

Captain Wingate's 16th paragraph.

The REVENUE COMMISSIONER, Southern Division, with copy of the papers referred to in paragraph 17 of the Resolution.

NOTE.—The communications referred to in paragraphs 16, 18, and 19 of this

*Extract (para. 4) of Despatch from HONORABLE COURT OF DIRECTORS,  
No. 10, dated 13th August 1856.*

PARAGRAPH 4. The letters referred to in the margin transmit for

*Letter No. 57, dated 23rd June 1855.*

*Letter No. 81, dated 10th September 1855.*

Introduction of revised rates of assessment into twenty-one villages of the Hawaillee talooka and into the Mawul talooka of the Poona collectorate.

*Letter No. 84, dated 11th September 1855.*

Introduction of revised rates of assessment into the Hoongoond talooka, and into fifty-three villages of the Uthnee and two villages forming the Yadwai division of the Gokak talooka of the Belgaum collectorate.

*Letter No. 93, dated 15th October 1855.*

Introduction of revised rates of assessment into six talookas of the Ahmednuggur collectorate, viz. Newassee, Kurdeh, Nuggur, Koretee, Sheogaum, and Jamkheir,

*Letter No. 94, dated 15th October 1855.*

Experimental introduction of revised rates of assessment into three villages of the Rutnagherry collectorate.

*Letter No. 101, dated 1st November 1855.*

Introduction of revised rates of assessment into the mamlutdar's division of the Sowda talooka, and into the Yawul talooka of the Khandeish collectorate.

would be useless for us to review in detail the particular cases in which they have been practically brought into operation. It is sufficient for us to state that from an examination of the voluminous reports submitted to us, we are satisfied that care and circumspection have been exercised by the several officers concerned, to adjust the rates according to the varying circumstances of the districts to which they have to be applied.

---

our information the detailed proceedings on which the formal sanction of your Government has been given to the introduction and continuance for the usual term of thirty years of revised rates of assessment in the several portions of collectorates therein enumerated. We have on former occasions signified to you our full approval of the general principles on which these measures are being conducted, and it would be as inconvenient as it

## APPENDIX.

No. 53 of 1864.

### MEMORANDUM.

The Revenue history of the Hoongoond Talooka since the last year entered in the statement at page 16 may be seen in the statement at page 121.

2. A large sum appears in column 4 under the head of remissions on account of poverty, &c. opposite the year 1853-54. This was a year of almost entire failure of crops in inland districts like Hoongoond, and the revision of assessment not having been in operation long enough to admit of the accumulation of capital sufficient to admit of an occasional bad year being borne, remissions were unavoidably granted. In three subsequent years also small sums appear under the same head, regarding the circumstances connected with which I have no information. The entries in column 5 of the statement for Hoongoond and the other districts comprize allowances to village servants, which, instead of being issued direct from the treasury, are paid by allowing a remission for the amount from land revenue due by the recipient of the allowance.

3. The anticipations indulged in by me in paragraph 26 have been most fully realized. The progress of the reclamation of land from unoccupied waste, as shown by the areas entered in column 2, has been constant and without retrogression. In the first year after the settlement (1852-53) and in 1862-63 (the last year for which I have data) the areas of Government land (occupied and waste) and the assessment on each were as follows :—

YEARS.	GOVERNMENT OCCUPIED LAND.		GOVERNMENT UNOCCUPIED LAND, ARABLE WASTE.		
	Area.	Survey Assessment.	Area.	Survey Assessment.	Average Assessment per Acre.
	Acres.	Rs.	Acres.	Rs.	Rs. a. p.
1852-53 .....	107,099	62,830	53,044	27,526	0 8 4
1862-63 .....	158,106	90,305	6,510	2,515	0 6 0

4. The large reduction in the average rate of assessment of the land remaining waste shows that the land taken up since 1852-53 includes that bearing the highest assessment. This affords the most conclusive proof of the justice of our rates.

5. The statement at page 122 affords similar information regarding the fifty-three villages of the Uthnee Talooka settled in 1851-52, and bring up their revenue history from the last year entered in the statement at page 34 up to last year. In these villages no remissions whatever have been given on account of poverty, failure of crops, &c. since the introduction of the new rates.

6. In this talooka too the occupied area has year by year steadily increased. The following exhibits a contrasted abstract statement of the returns of the first year after the settlement and those of last year :—

YEARS.	GOVERNMENT OCCUPIED LAND.		GOVERNMENT UNOCCUPIED LAND, ARABLE WASTE.		
	Area.	Survey Assessment.	Area.	Survey Assessment.	Average Assessment per Acre.
	Acres.	Rs.	Acres.	Rs.	Rs. a. p.
1852-53 .....	124,648	54,419	83,734	21,359	0 4 1
1862-63 .....	177,643	69,691	31,322	6,313	0 3 3

7. The decrease in the average assessment of the land still remaining waste affords, as in Hoongoond, full proof of the justice of the survey assessment. The area of waste is greater in proportion than in Hoongoond. In the Uthnee talooka the villages run very large, and a portion of the lands is frequently four or five miles or even more from the village site. This waste land is, as the assessment shows, of very poor quality indeed. The scanty fall of rain common in the east of Uthnee is specially unfavourable to the cultivation of poor light soils. The reclamation of such land must therefore be gradual. In the meantime it is satisfactory to see that the area of this unreclaimed arable waste, as shown in column 7, is steadily decreasing in each successive year.

8. The statement at page 123 gives the revenue history of the ten villages included in the Yadwar Mahal from the last year entered in the statement at page 46 up to last year.

9. In a single year only (1857-58) does any remission on account of poverty, &c. occur, and this only to the trifling extent of Rs. 43.

10. The reclamation of unoccupied waste has been not less marked in proportion to the size of the district than in Hoongoond or Uthnee. The following statement contrasts the returns of the first year after the settlement with those of last year :—

YEARS.	GOVERNMENT OCCUPIED LAND.		GOVERNMENT UNOCCUPIED LAND, ARABLE WASTE.		
	Area.	Survey Assessment.	Area.	Survey Assessment.	Average Assessment per Acre.
	Acres.	Rs.	Acres.	Rs.	Rs. a. p.
1852-53 .....	15,385	7,839	7,136	3,295	0 7 5
1862-63 .....	21,380	10,550	464	193	0 6 8

11. In all of these districts the reclamation of Government arable waste commenced immediately after the settlement, and in each case more than half was reclaimed before the great rise in prices which became marked about 1857. Prices were undoubtedly on the rise



before that year, but not to anything approaching the height to which they have attained since. The security of tenure and just assessment of the survey settlement did undoubtedly put all these districts on the fair road to prosperity. Their progress has certainly been much hastened by the excessive prices prevailing of late years. It is hardly probable that all the waste land will ever be occupied. In villages where there are no hill or jungle lands available for common grazing lands, one or two revenue survey fields will be generally left waste, public opinion in the village deterring any one person from taking these fields up to the inconvenience of the rest of the ryots.

12. In all these districts the items appearing in column 12, which exhibits the collections on enams, joodee, &c., have largely increased since 1860-61, from the end of which year the introduction of the summary settlement of enams dates, by which means an annual payment of four or five annas on the rupee of survey valuation of an enam, together with the grant of a fee-simple tenure, was elected by the enamdars almost without exception, instead of standing the result of an investigation by the Enam Commission.

13. I have shown the amount of the outstanding balance of revenue uncollected at the end of each revenue year; these amounts were all collected in the subsequent year. In the Yadwar mahal no balances have remained uncollected in any year. Both the sums appearing under this head in column 16 of the Uthnee statement relate to joodee ("quit rent," as it is sometimes anglicized) on enam land. The two large sums in column 16 of the Hoongoond statement also refer to joodee uncollected at the close of the year. Disputes frequently occur among the sharers in a joodee enam as to who is to pay, and how much; but if the mamlutdar does his duty properly there can be no excuse for any sums remaining uncollected on joodee enam at the close of the revenue year.

W. C. ANDERSON, Major,  
Supt. Rev. Survey & Assessment S. M. C.

*Superintendent's Office, Dharwar,  
6th February 1864.*

**STATEMENT giving the Revenue history of 142 Villages of the HOONGOOND TALOOKA since 1852-53, the last year entered in the Statement at page 16.**

121

YRS.	GOVERNMENT OCCUPIED LAND.						GOVERNMENT UNOCCUPIED ARABLE WASTE.			ENAM OF ALL DESCRIPTIONS.				TOTAL GOVERNMENT OCCUPIED ARABLE WASTE AND ENAM.			Outstanding Balance at the end of the year.
	Area.	Survey Assessment.	Remissions to be deducted.		Net Collections.	Area.	Survey Assessment.	Produce of auction sale of right of grazing.	Area.	Survey Assessment.	Collections, &c.	Area.	Survey Assessment.	Collections.			
			On account of Poverty.	Failure of Crops, &c.											In remuneration for service.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
	Acres.	Rs.	Rs.	Rs.	Rs.	Acres.	Rs.	Rs.	Acres.	Rs.	Rs.	Acres.	Rs.	Rs.	Rs. a. p.		
1853-54	106,268	62,160	5,042	121	56,997	53,216	27,951	4,339	80,586	46,279	12,799	240,070	1,36,390	74,135	338 1 8		
1854-55	108,348	63,434	148	124	63,162	52,186	27,184	2,733	79,536	45,772	12,452	240,070	1,36,390	78,347	Joodee.		
1855-56	112,342	65,584	28	332	65,224	49,546	25,813	2,409	78,182	44,992	12,505	240,070	1,36,389	80,138	17 4 0		
1856-57	122,921	71,564	...	112	71,452	39,470	20,100	2,629	77,853	44,834	12,535	240,244	1,36,498	86,616	....		
1857-58	132,594	76,766	339	107	76,320	29,999	14,996	1,649	77,644	44,733	12,607	240,237	1,36,495	90,576	....		
1858-59	140,075	80,813	...	111	80,702	22,934	11,154	1,990	77,155	44,484	13,102	240,164	1,36,451	95,794	303 4 0		
1859-60	149,632	85,893	...	101	85,792	13,835	6,307	1,286	76,695	44,250	13,128	240,162	1,36,450	1,00,206	Joodee.		
1860-61	154,617	88,451	...	106	88,345	9,049	3,846	975	76,496	44,153	15,375	240,162	1,36,450	1,04,695	....		
1861-62	157,347	89,865	...	98	89,767	7,012	2,520	900	75,788	43,761	17,734	240,147	1,36,446	1,08,401	....		
1862-63	158,106	90,305	...	98	90,207	6,510	2,515	815	75,531	43,626	17,709	240,147	1,36,446	1,08,731	....		

**STATEMENT giving the Revenue history of 53 Villages of the UTHNEE TALOOKA since 1852-53, the last year entered in the Statement at page 34.**

YEARS.	GOVERNMENT OCCUPIED LAND.						GOVERNMENT UNOCCUPIED ARABLE WASTE.			NAME OF ALL DESCRIPTIONS.				TOTAL GOVERNMENT OCCUPIED ARABLE WASTE AND ENAM.				Outstanding Balance at the end of the year.
	Area.	Survey Assessment.	Remissions to be deducted.		Net Collections.	Area.	Survey Assessment.	Produce of auction sale of right of grazing.	Area.	Survey Assessment.	Collections, &c.	Area.	Survey Assessment.	Collections.				
			On account of Poverty, failure of Crops, &c.	In remuneration for service.														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16			
	Acres.	Rs.	Rs.	Rs.	Rs.	Acres.	Rs.	Rs.	Acres.	Rs.	Rs.	Acres.	Rs.	Rs.	Rs. a. p.			
1853-54	130,684	56,699	....	1,020	55,680	73,146	17,442	2,663	80,803	34,919	8,863	284,633	1,09,060	67,206	....			
1854-55	139,021	59,243	....	971	58,273	66,548	15,411	3,251	79,238	34,394	8,899	234,807	1,09,048	70,423	....			
1855-56	143,979	61,073	....	1,044	60,029	62,682	14,093	2,879	77,946	33,882	8,787	284,607	1,09,048	71,695	....			
1856-57	153,221	63,868	....	975	62,893	53,566	11,328	2,785	77,819	33,852	8,789	284,606	1,09,048	74,471	....			
1857-58	159,899	65,560	....	276	65,284	46,935	9,656	2,482	77,769	33,832	9,073	284,603	1,09,048	76,839	....			
1858-59	164,629	66,398	....	267	66,132	42,336	8,862	2,457	77,638	33,788	9,754	284,603	1,09,048	78,343	667 12 0			
1859-60	166,283	66,834	....	267	66,568	41,299	8,691	2,521	77,004	33,521	9,797	284,586	1,09,046	79,186	Jodee.			
1860-61	169,792	67,587	....	257	67,380	38,237	8,083	2,786	76,334	33,306	10,854	284,363	1,08,976	80,970	11 8 0			
1861-62	174,277	68,522	....	139	68,473	34,357	7,372	2,688	75,391	32,876	13,012	284,025	1,08,770	84,173	Jodee.			
1862-63	177,643	69,691	....	33	69,659	31,222	6,313	2,678	75,174	32,775	13,136	284,039	1,08,779	85,468	....			

**STATEMENT giving the Revenue history of 10 Villages of the YADWAR MAHAL since 1852-53, the last year entered in the Statement at page 46.**

YEARS.	GOVERNMENT OCCUPIED LAND.						GOVERNMENT UNOCCUPIED ARABLE WASTE.			EXAM OF ALL DESCRIPTIONS.				TOTAL GOVERNMENT OCCUPIED ARABLE WASTE AND EXAM.			Outstanding Balance at the end of the year.
	Area.	Survey Assessment.	Remission to be deducted.		Net Collections.	Area.	Survey Assessment.	Produce of auction sale of right of grazing.	Area.	Survey Assessment.	Collections, &c.	Area.	Survey Assessment.	Collections.			
			On account of failure of Crops, &c.	In remuneration for service.													
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
	Acres.	Rs.	Rs.	Rs.	Rs.	Acres.	Rs.	Rs.	Acres.	Rs.	Rs.	Acres.	Rs.	Rs.	Rs. a. p.		
1853-54	16,851	8,555	...	15	8,540	4,721	2,061	349	12,751	6,529	1,891	34,323	17,145	10,780	...		
1854-55	18,296	9,213	...	15	9,198	3,223	1,385	287	12,794	6,547	1,914	34,323	17,145	11,399	...		
1855-56	19,167	9,638	...	15	9,623	2,361	960	244	12,795	6,547	1,915	34,323	17,145	11,782	...		
1856-57	20,773	10,273	...	15	10,258	612	247	89	12,941	6,626	2,004	34,326	17,146	12,351	...		
1857-58	21,389	10,542	43	15	10,484	117	41	18	12,820	6,563	1,927	34,326	17,146	12,429	...		
1858-59	21,128	10,429	...	15	10,414	391	162	45	12,807	6,555	1,918	34,326	17,146	12,372	...		
1859-60	20,713	10,247	...	15	10,232	867	369	102	12,746	6,530	1,919	34,326	17,146	12,253	...		
1860-61	21,134	10,441	...	15	10,426	614	258	78	12,579	6,448	1,905	34,327	17,147	12,409	...		
1861-62	21,084	10,419	...	15	10,404	698	298	66	12,544	6,429	2,154	34,326	17,146	12,623	...		
1862-63	21,390	10,550	...	15	10,535	464	193	45	12,516	6,415	2,152	34,360	17,158	12,732	...		

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**SELECTIONS FROM THE RECORDS OF THE BOMBAY  
GOVERNMENT.**

**No. LXXXII.—NEW SERIES.**

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**R E P O R T**

**ON THE QUESTION OF**

**IRRIGATION IN THE YERLA VALLEY.**

  
**WITH A MAP AND TEN PLANS, &c.**  


**Bombay:**

**PRINTED FOR GOVERNMENT**

**AT THE EDUCATION SOCIETY'S PRESS, BYCULLA.**

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**1864.**









No. 166 OF 1863.

PUBLIC WORKS DEPARTMENT.

FROM the ASSISTANT SUPERINTENDING ENGINEER FOR IRRIGATION,  
TO the SUPERINTENDING ENGINEER FOR IRRIGATION.

SIR,—In forwarding you the accompanying plans and estimates as per attached list, I have the honour to append an explanatory report on the question of Irrigation in the Yerla Valley.

2. Before proceeding to explain the project that I would propose for immediate execution, I will draw your attention to a more extended scheme for a system of irrigation that would provide for the wants of the greater part of the valley of the Yerla.

3. Your measurements of the volume of the river, as well as those made by me, established the fact that no more than ten cubic feet per second of hot-weather supply can safely be reckoned upon. It then became evident that some arrangement for extensive storage should be resorted to ; and on making an examination of the country at the head of the river, I found a sufficiently favourable site for the construction of a storage lake.

4. Above the village of Neher the valley of the river narrows in till the hills approach to within about a mile of each other, and immediately above this point the basin widens out to a breadth of two and a half miles, while it stretches northward for upwards of three miles. Thus by throwing a bank having a mean height of 66 feet across the gorge, we would confine a sheet of water equal to  $3\frac{1}{2}$  square miles, with a mean depth of 36·5 feet, and containing some 140,197,375 cubic yards of water.

5. The area of rainfall for the supply of the lake is about 62 square miles, and taking the average fall for five years, and assuming that one-fourth would be lost by absorption, we arrive at the conclusion that the proposed reservoir would contain the whole of the available rainfall of an average year. Assuming that eight feet depth over the whole reservoir were lost by evaporation, there would still remain sufficient for 20,000 acres of perennial irrigation.

6. The features of the country are in many respects favourable to the construction of a reservoir for storage. Two large nullas fall into the river immediately above the dam site, so that not only is the area of the lake very considerable, but the depth for a large portion of the area is beyond what that of tanks of equal area usually is. There is an ample supply of good soil for the construction of the dam close to where it is proposed to be placed.

7. To the east of the site of the embankment the ground is highly favourable for the position of a waste weir; it is of hard moorum, and is in the form of a shallow depression leading away from the dam, and ending in a wide nulla that would suffice to carry off all surplus water clear of the works, and finally lead it into the river opposite the village of Neher. An inspection of the lake plan will explain clearly the line of the ground.

8. For the distribution of the water it was proposed to establish four sets of works with channels leading off at both sides of the river (as shown on the attached sketch plan). It was intended that they should be situated at Neher, Khadgoon, Wankeshwur, and Nudwall, these places affording favourable sites for the erection of dams and regulating works.

9. With this in view I had the necessary levels taken, hoping to be able to lay the complete project before Government. Having, however, completed some of the drawings, and having made a sufficiently accurate estimate of the cost of the whole scheme to enable me to compare the result with the return, I found that the comparison was not so favourable as I had hoped and anticipated. The return in fact that might fairly be counted on would not represent a

sufficiently large percentage on the cost to justify the commencement of the work.

10. It would be necessary, in order to make the project sufficiently remunerative, either to reduce the dimensions and cost of the reservoir, or else to extend the area of land to be irrigated. If either expedient be adopted, I have no doubt that a successful issue will be arrived at. The latter alternative is the natural one, and that I would recommend. I intended indeed, if time had admitted of doing so, to carry all the lines of channel sufficiently far to embrace more country than the reservoir could possibly have served to irrigate, but this, I regret to say, circumstances prevented. I believe that it will be necessary to add to the present project one or two pairs of channels further down the valley.

11. Even if I could place the project in a sufficiently advantageous point of view, I fear that Government would be unwilling to sanction it as a whole. It would probably be objected to as absorbing more than a fair proportion of the outlay for the improvement of the country that Government are prepared to accord.

12. The project that I have now the honour to submit for your approval is simply a part of the whole scheme for the irrigation of the Yerla Valley, and carried out in its present form will need no modification when the time for construction of the reservoir and of the other distributing works on the river may arrive.

13. The work that I would propose for execution during the approaching season is the construction of a masonry dam across the river at Khadgoon, with a pair of distribution channels—that on the right bank (channel C) to be 9 miles long, and that on the left bank (channel D)  $8\frac{1}{2}$  miles long. The country lying under the command of these channels amounts to about 20 square miles, and allowing that three-fourths of the whole were under irrigation, we would leave an acreage of 9,600 watered. The greater part (if not the whole) of the land is rich, black soil, but in many places, from its high position and consequent want of moisture, it is unproductive to a great degree. The remedy for this is of course to bring it under command of an unfailing supply of water, and secure a regular crop where the prospect was before doubtful.

14. The principal works are as follows :—

*The Dam.*

It will have a width of 4 feet on the top, increasing by offsets of 1 foot 3 inches in every foot and a half of depth, till at the greatest height the base will reach a width of 15 feet 3 inches. An average depth of foundation of 2 feet has been provided for in the estimate, but this is probably in excess, for the river-bed is of sound and compact rock. It is well, however, that the estimate for foundations should in every case be rather in excess than too low, as unforeseen contingencies are likely to present themselves.

15. The whole width of the river-bed at the dam site is 510 feet. The dam will cross it at right angles, the centre portion for the height of 434 feet being straight, and the ends curved in the direction of the proposed channels. From the extremity of each of the curves a flank-wall will be carried up the bank to prevent injury of the channel by high floods. On the left bank the flank-wall will be carried on till it runs into the rocky bank ; but on the right, as the ground is lower, the flank-wall will be partly replaced by an earthen embankment. The height of the walls above the crest of the dam is 18 feet, or 3 feet above the greatest height the river can rise, assuming the flood of 1853 to be the highest that can possibly occur.

16. In 1853 the water of the river attained a height of 25 feet above the lowest point in the section, and my calculations show an afflux due to the dam and flank walls of 5 feet more, making 30 feet the greatest depth of water that any flood can occasion.

17. The ends of the dam are provided with scouring sluices, that will have the effect of carrying off all deposit that may come down in flood, and keep the entrance of the channel clear. The head of the channel is also under the control of a sluice, that will of course be shut on the approach of a flood in the river. I propose that the dam should be built of uncoursed rubble on the inside and hammer-squared work on the down stream side: all the best stones will be set aside for that part of the work. The estimate for the dam and head sluices is Rs. 12,965.

### *The Channels.*

18. Both the right and left bank channels will be of the same dimensions and shape. The latter has been laid out on the ground at the rate of 2 feet 6 inches to the mile ; but this will most probably be altered when the work comes to be carried out. It will, I anticipate, be advisable to increase the inclination, as well as to diminish the section, at every mile after the third. • Both channels will be carried for the first three miles at a uniform section of discharge, namely, 17·5 square feet, any diminution of the section up to the end of the third mile being unnecessary, as the amount of land lying between the channels and the river is small, and the expenditure of water will consequently be inconsiderable.

19. After the third mile the width of the channel will decrease regularly at the rate of 9 inches in every mile, till at the end of the ninth mile the section of discharge will be reduced to 8·5 square feet: the depth of water will continue uniform for all sections at 2 feet. The following are the dimensions of the channel at each mile :—

No. of Miles.	Bottom width.	Top width.	Slopes.	Depth.	Discharge in Cubic Feet per Second.
	ft. in.	ft. in.			ft. in.
1 to 3	5 9	11 9	1½ to 1	2	41 65
4	5 0	11 0	..	..	37 60
5	4 3	10 3	..	..	33 50
6	3 6	9 6	..	..	29 38
7	2 9	8 9	..	..	25 30
8	2 0	8 0	..	..	21 30
9	1 3	7 3	..	..	17 42

20. I would remark here that the line of the channel, as laid down on the ground and levelled over, will probably require some slight alteration. Time did not admit of selecting the line most strictly economical or theoretically correct, nor does it appear advisable that more time should have been devoted to doing so previous to framing

the estimates. Any alteration of the channel or masonry works that may be necessary can be made while the work is in progress without materially affecting the estimate.

21. In most cases I have kept the channel at such a height over nullas as to allow the surface drainage to pass underneath it. This would have been the most desirable in every situation if it were possible, but in every channel the line of slope must intersect some watercourses at an awkward level, leaving no alternative but to allow the drainage to pass into, or rather over the canal.

22. There are on the two channels altogether 42 masonry works, which, with the exception of two, have been provided for in the estimate by general plans. Of these two aqueducts one is of considerable size, namely, five spans of 40 feet each, crossing over a large nulla that falls into the river above Wankeshwur; the other carries the channel over a branch of the same nulla, and consists of six spans of 15 feet. The aqueducts will only differ from each other in the number and span of the arches, the same dimensions holding good for all other parts, the necessary allowances being made for difference of height. Wherever the bed of the nulla is of sound material, the aqueducts will be provided with escapes so as to get rid of any excess of water that may get into the channel after heavy showers.

23. The general drawings (Nos. 1, 2, 3, and 7) are for situations where the line of channel nearly coincides with the highest water in the nulla. They are simple walls across the nulla, and are pierced with sluices that can be opened when it is necessary to get rid of deposit. The channel water will discharge itself into the nulla above the dam and issue at the other side.

24. I now come to the question of the water at our disposal, and the probable return that will be derived from the construction of the works. As I before remarked, the supply during the hot season, or the months of February, March, April, and May, cannot safely be taken at more than 10 cubic feet per second. This amount I have not the slightest doubt may be relied on, and is the most valuable part of the stream's supply. It will serve to raise upwards of 1,000 acres of sugarcane, or such other garden produce as must have irrigation during the whole year round.

25. Your measurements, as well as those taken by me in February last, went to show that 20 cubic feet per second may be taken as the reliable discharge during the cold months. Deducting the 10 cubic feet of perennial supply, we shall then have 10 cubic feet as the supply for the rubber crops.

26. Since the commencement of the present monsoon I have had observations relative to the discharge of the river taken, and for several days together, during which no rain fell in the valley, the discharge was registered at upwards of 90 cubic feet per second. Let us assume however, in order to leave a safe margin, that the supply during the four monsoon months is at lowest 85 cubic feet per second; this, deducting 20 cubic feet for the perennial and eight months' supplies, gives us 65 feet per second as the monsoon supply.

27. In estimating the return that may be derived from carrying out the work, I will adopt the rates that the Collector of Sattara has determined on, and has communicated in his letter No. 154 of 1863 to your address. He has fixed Rs. 4 as the rate for a perennial supply, Rs. 3 for an eight months' supply, and Rs. 2 for a four months' one. Let us take then—

Perennial irrigation 1,000 acres, at Rs. 4 per acre..	Rs. 4,000
Eight months' supply 2,000 acres, at Rs. 3 per acre. „	6,000
Four months' supply 6,500 acres, at Rs. 2 per acre. „	13,000

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Total....Rs. 23,000

*Deduct* for maintenance and repairs at five per-cent

on the cost Rs. 1,47,546 ..... „ 7,377

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Net return....Rs. 15,623

28. This return is calculated on the assumption that of the 12,800 acres of land under command of the channels, 9,500 acres, or nearly three-fourths of the whole, will be brought under irrigation. The work done by the perennial supply is taken at 100 acres for every cubic foot per second; that by the eight months' supply at 200 acres per cubic foot, and the monsoon irrigation at 100 acres for every foot of continuous flow.



29. Comparing the above estimate of return from the work with the cost, we find that there will be a return of over ten per-cent on the outlay. The rates of assessment are, however, low compared with those that obtain in Khandeish, and there is every reason to expect that when the cultivators become aware of the value of water they will willingly pay higher than the rates we have assumed. The Collector of Sattara indeed in fixing the rates says that they should at first be very low, and merely suggests them for adoption in the first instance.

I have the honour to be, &c.

A. JACOB,

Assistant Superintending Engineer for Irrigation.

*Assist. Suptg. Engineer for Irrigation at Sattara's Office,  
Kirkee, 12th August 1863.*

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*List of Plans for the Yerla Irrigation Project ; to accompany letter No. 166 of 1863. From A. JACOB, Esq., Assistant Superintending Engineer for Irrigation, Sattara, to Captain J. G. FIFE, Superintending Engineer.* •

Number of Drawing.	Description of Work.
1, 2, 3	Escapes of 1, 2, and 3 openings.
4	Aqueduct one arch of 30 feet span.
5	Aqueduct one arch of 40 feet span.
6	Aqueduct three arches of 20 feet span.
7	Escape of ten openings.
8	Aqueduct 5 spans of 40 feet.
9	Aqueduct 6 spans of 15 feet.
10	Cross sections of channels.
11	Longitudinal sections of channels.
12	Bundara.

A. JACOB,

\*Assistant Suptg. Engineer for Irrigation.

*List of Aqueduct and Escapes for Channel C,  
Yerla Irrigation Project.*

Number.	Mileage.		General Drawing.	Description.
	Miles.	Chains.		
1	..	6	No. 3	} Escape of three openings.
2	..	8	" 3	
3	..	29	" 6	} Three 20 feet arch.
4	..	40	" 6	
5	..	66	" 6	
6	1	40	" 1	Escape of one opening.
7	1	44	" 3	Escape of three openings.
8	1	71	" 6	} Three 20 feet arch.
9	2	13	" 6	
10	2	17	" 7	Escape of ten openings.
11	2	46	" 4	} 30 feet arch.
12	3	13	" 4	
13	3	33	" 4	
14	3	44	" 4	
15	4	64	" 7	Escape of ten openings.
16	5	44	" 4	30 feet arch.
17	6	68	" 6	Three 20 feet arch.

A. JACOB,  
Assistant Suptg. Engineer for Irrigation.

*List of Aqueduct and Escapes for Channel D,  
Yerla Irrigation Project.*

Number.	Mileage.		General Drawing.	Description.
	Miles.	Chains.		
1	..	6	No. 1	} Escape of one opening.
2	..	9	" 1	
3	..	11	" 1	
4	..	12	" 1	
5	..	15	" 1	
6	..	16	" 3	Escape of three openings.
7	..	17	" 1	Escape of one opening.
8	..	20	" 2	Escape of two openings.
9	..	23	" 4	} 30 feet arch.
10	..	68	" 4	
11	..	73	" 4	
12	1	6	" 2	Escape of two openings.
13	1	17	" 1	} Escape of one opening.
14	1	37	" 1	
15	1	41	" 6	} Three 20 feet arch.
16	2	10	" 6	
17	2	43	" 3	} Escape of three openings 40 feet arch.
18	3	9	" 5	
19	3	56	" 3	} Escape of three openings.
20	5	19	" 3	
21	5	26	" 4	30 feet arch.
22	5	33	Special.	Six 15 feet arch.
23	5	62	Special.	Five 40 feet arch.
24	6	18	No. 5	40 feet arch.
25	6	27	" 4	30 feet arch.

A. JACOB,  
Assistant Suptg. Engineer for Irrigation.

*ESTIMATE framed by Mr. A. JACOB, Executive Engineer for Irrigation, Sattara, of the probable Cost of Constructing a Masonry Bundara with Head and Scouring Sluices on the Yerla River at the village of Khadgoon.—Amount Rupees 15,209.*

#### GENERAL DESCRIPTION.

The total length of the dam to be 538 feet. The foundations to be taken down an average depth of 2 feet 6 inches. The bundara to be eight feet wide at top, diminishing to 6 feet at the ends.

The thickness of the dam will increase by offsets to 14 feet at bottom, giving a mean thickness of 11 feet for a height of 16 feet. Where the dam joins the banks of the river it curves with a radius of 25 feet to facilitate the scouring action of the stream and lead the water into the channel. It will be provided with flanking walls, which will be carried above the line of highest flood, and horizontally into the banks of the river. There will be a scouring sluice at either end of the dam to keep the channel free from silt.

#### CONSTRUCTION.

Foundations . . . . . Rock.

Superstructure . . . . . Uncoursed rubble and lime with coursed facing.

Sills of sluices . . . . . Dressed stone and lime.

Arching . . . . . Dressed stone and lime.

## MEASUREMENTS.

<i>Excavation of Foundation.</i>	<i>No.</i>	<i>Length</i>	<i>Breadth.</i>	<i>Depth.</i>	<i>Solid Feet.</i>
Lower course.....	1	370	14	3·5	18,130
Next course to beginning of curve.	2	32	12	3·5	2,688
First portion of curve .....	2	8	8	4·5	576
Second portion of curve .....	2	13	10·5	2	546
Flooring of channel .....	2	25	13	1·25	812·5
End of curve, including floor of sluice .....		17	6	1·2	255
Flanking wall east side .....		130	4	3·5	1,820
Buttresses to east side .....		5	4	3·5	350
Flanking wall west side .....	1	30	5·5	4·75	783·75
Buttress .....	1	5	4	3	60
Wing walls end of west buttress	2	35	4·5	3	945
Under-arches.....	2	11	7	6	924

Cubic feet Excavation of Foundation... 27,890·25

<i>Superstructure.</i>	<i>Number.</i>	<i>Length.</i>	<i>Breadth.</i>	<i>Depth.</i>	<i>Solid Feet.</i>
Dam centre portion .....	1	300	11	16	52,800
Portions at end of dam.....	2	35	10·55	14	10,339
Third portion up to curve....	2	32	10	12	7,680
First portion of curve .....	2	8	8	12	1,536
Second portion of curve .....	2	27	6	9	2,916
Portion under scouring sluice .....	2	6	6	4·5	324
Floor of channel up to flank wall..	2	15	11·5	3	1,035
Side wall of channel.....	2	24	2	3	288
Outer abutment of culvert ..	2	7	3	6	252
Inner abutment of culvert.....	2	7	2	6	168
Floor of culvert.....	2	11	7	3	462
Flanking wall right bank ....	1	30	4·25	18	2,295
Flanking wall left bank .....	1	130	4·25	12·7	7,016·75
Wing wall .....	2	35	3·5	18	4,410
Counterfort .....	6	14·66	3·5	4	1,231·44

Cubic feet of Superstructure.. 92,753·19

*Arching.*

Over culvert .....

Number.	Length.	Breadth.	Depth.	Solid Feet.
	Area.			
2	12	75	13	331.5
Cubic feet of Arching.....				331.5

*Centering Stone and Mud.*

	Number.	Breadth.	Solid Feet.
	Area.		
Under culvert arches	24	34	13
			632.84
Cubic feet of Centering.			632.84

*Cut Stonework.*

	Number.	Br.	Sq.
Sills and frames of sluices.	2	18	2
	2	19	2
			72
			76
Square feet of Cut Stone.			148

*Sluice Gates.*

Scouring sluices	2
Channel sluices.	2

Number of Sluice Gates.

<i>Chunam Plaster.</i>	Number.	Length	B <sub>1</sub>	Sq
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Top of dam .		514 .	10	5,140
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Square feet of Plastering.				5,140
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<i>Earthwork.</i>	Number.	Length	Cubi feet.
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Embankment right bank	155	250	38,750
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Cubic feet of Earthwork.			38,750
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*Abstract.*

		<i>Rs.</i>	<i>a.</i>	<i>p.</i>
27,890·25	Cubic feet excavation of foundation at Rs. 2-8 per 100 cubic feet .....	697	4	0
92,753·19	Cubic feet superstructure at 14 rupees per 100 cubic feet .....	12,985	6	8
331·	Cubic feet arching at 25 rupees per 100 cubic feet .....	83	0	0
632·84	Cubic feet centering stone and mud at 6 rupees per 100 cubic feet .....	37	15	8
148	Square feet cut stones at 15 rupees per 100 cubic feet .....	22	3	2
2	Number of sluice-gates at 25 rupees each ....	50	0	0
2	umber of sluice-gates at 55 rupees each ....	110	0	0
5,140	quare feet chunam plaster at 5 rupees per 100 square feet .....	257	0	0
38,750	ubic feet earthwork at 10 annas per 100 cubic feet .....	242	0	0
		<b>Rupees</b>	<b>14,484</b>	<b>13 6</b>
<i>Add—Contingencies 5 per-cent</i>			<b>724</b>	<b>4 0</b>
<b>Grand Total....Rupees</b>			<b>15,209</b>	<b>1 6</b>

A. JACOB,  
Executive Engineer for Irrigation.

*ESTIMATE framed by Mr. A. JACOB, Assistant Superintending Engineer for Irrigation, Sattara, of the probable Cost of Excavating two Irrigational Channels at either side of the Yerla River.*  
—Amount Rs. 71,117.

### GENERAL DESCRIPTION.

The channels to be of the dimensions shown in the tracing.

They will be 5 feet 9 inches wide at bottom and 16 feet 3 inches at top for the first 3 miles, narrowing to the tail at the rate of 9 inches in every mile.

The depth will be uniform at 3 feet 6 inches, and the slope 2 feet 6 inches per mile throughout.

### *Earthwork quantities in Banks.*

Number of Bank.	DISTANCE.		Mean Height.	Mean Sectional Area.	Solid Contents, Cubic Feet.	REMARKS.
	Chains.	Feet.				
1	10	660	2.5	105	69,300	
2	14	924	4.8	189	174,636	
3	5.5	363	5.4	189	68,607	
4	10	660	2.7	105	69,300	
5	3	198	1.5	67	13,266	
6	12	792	5.9	236	186,912	
7	18.5	1,221	4.6	189	230,769	
8	24	1,584	6.4	236	373,824	
9	28	1,848	5.1	184	340,032	
10		1,551	4.8	184	285,384	
11	22	1,452	2.3	65	94,380	
12	10.5	693	2.3	63	43,659	
13	23.5	1,551	8.0	325	504,075	
14	8.5	561	2.0	62	34,782	
15	12	792	3.4	98	77,616	
16	12	792	4.0	137	108,504	
17	8	528	2.3	60	31,680	
18	25	1,650	3.7	132	217,800	
	270	17,820		50.85	906,147	Sides of channel.
	4.5	297		50.85	15,102	Sides on level ground.
Total Cubic feet of Bank....					38,45,775	

*N.B.*—The embankments are calculated up to the level of the bottom of the channel, and the contents of the side banks afterwards added.

*Earthwork quantities in Cuttings.*

Number of Cuttings.	DISTANCE.		Mean Height.	Mean Sectional Area.	Solid Contents.	REMARKS.
	Chains.	Feet.				
1	10	660	2.4	47.5	31,350	
2	6.5	429	2.5	67.5	28,958	
3	22	1,452	4.1	89.5	129,954	
4	24	1,584	4.8	114.5	181,868	
5	5	330	1.3	31.5	10,395	
6	36	2,376	4.2	89.5	212,652	
7	5	330	1.5	47.5	15,675	
8	15	990	3.5	89.5	88,605	
9	13	858	3.1	67.5	57,915	
10	9	594	5.1	108.0	64,152	
11	9	594	1.0	29.0	17,226	
12	12	792	2.6	56.5	44,748	
13	36	2,376	3.1	56.5	134,244	
14	7.5	495	2.6	54.0	26,730	
15	10.5	693	4.2	73.0	50,589	
16	18.5	1,221	3.2	54.0	65,934	
17	30	1,980	2.6	49.5	98,010	
18	8.5	561	1.5	34.5	19,354	
19	24	1,584	6.1	109.0	172,656	
Total Cubic feet of Cutting....					14,50,515	....

*Earthwork quantities in Banks.*

Number of Bank.	DISTANCE		Mean Height.	Mean Sectional Area	Solid Contents.	REMARKS.
	Chains.	Feet.				
1	14	726	1·8	67	48,642	
2	13·5	891	4·1	145	129,195	
3	14	924	2·2	67	61,908	
4	16	1,056	6·3	236	249,216	
5	20	1,320	3·3	105	138,600	
6	4·5	297	3·0	105	31,185	
7	34	2,244	4·2	141	316,404	
8	43	2,838	3·6	141	400,158	
9	20·5	1,353	5·0	183	247,599	
10	35	2,310	2·7	98	226,380	
11	56	3,696	6·5	224	827,904	
12	8·6	561	2·5	93	52,173	
..	276	18,216	..	50·85	926,283	Sides of channel.
..	13	858	..	50·85	43,629	Sides on level ground.
Total Cubic feet of Bank....					3,699,276	

*Earthwork quantities in Cuttings.*

Number of Cuttings.	DISTANCE.		Mean Height.	Mean Sectional Area.	Solid Contents.	REMARKS.
	Chains.	Feet.				
1	6	396	1.7	47.5	18,810	
2	20	1,320	3.5	89.5	118,140	
3	37	2,442	4.3	89.5	218,559	
4	25	1,650	3.5	89.5	147,675	
5	19.5	1,287	4.2	89.5	115,186	
6	24	1,584	2.8	67.5	106,920	
7	23	1,518	4.8	108	163,944	
8	28	1,848	1.7	39.5	72,996	
9	26	1,716	3.8	76.5	131,274	
10	17	1,122	5.8	95	106,590	
11	115.5	{ 3,234 4,389 }	4.3	{ 68.5 64 }	502,425	
12	25.5	1,683	4.8	82.5	138,847	
Total Cubic feet of Cutting.....					1,841,366	

*N. B.*—Cutting No. 11 is calculated in two portions—3,234 running feet of it are calculated according to the section given for the seventh mile, and 4,389 running feet according to section for the eighth mile.

A. JACOB,  
Assistant Supt. Engineer for Irrigation.

*Abstract.*

		Rs.	a.	p.
3,845,775	Cubic feet of Bank in Channel C, at 10 annas per 100 cubic feet.....	24,036	1	6
1,450,515	Cubic feet of Cuttings in Channel C, at 10 annas per 100 cubic feet.....	9,065	11	6
3,699,276	Cubic feet of Banks in Channel D, at 10 annas per 100 cubic feet.....	23,120	7	7
1,841,366	Cubic feet of Cuttings in Channel D, at 10 annas per 100 cubic feet.....	11,508	8	7
Rupees		67,730	13	2
<i>Add</i> —Contingencies at 5 per-cent		3,386	8	7
Total....Rupees		71,117	0	0

A. JACOB,  
Assistant Suptg. Engineer for Irrigation.

**ESTIMATE framed by Mr. A. JACOB, Assistant Superintending Engineer for Irrigation, of the probable Cost of Constructing a Masonry Escape of one opening according to General Drawing No. 1, Yerla Irrigation Works.—Amount Rs. 86.**

### GENERAL DESCRIPTION.

The Escape to have one opening or sluice gate 2 feet wide by  $3\frac{1}{2}$  feet deep, each opening being 3 feet deep. The wall of escape to be continued 3 feet beyond sluice, with its crest at the same level as crest of sluice. Beyond this point the wing-wall to be carried with a thickness of one foot 15 feet into the bank of canal 3 feet higher than crest of sluice or 2 feet higher than flood level. The sluice wall to be 2 feet thick. The foundations of sluice wall to be 3 feet deep. An apron to be placed on outer side of sluice 4 feet wide and 1 foot deep.

### CONSTRUCTION.

Foundations and superstructure to be of uncoursed rubble masonry and chunam facing to sides and silts of sluices, to be of third sort cut-stone.

### MEASUREMENTS.

<i>Excavating Foundations.</i>					
	Number.	Length.	Breadth.	Depth.	Total Feet.
Sluice-wall .....	1	14	2.5	3.5	122.50
Wing-walls.....	2	12	1.5	7	252.00
Apron .....	1	14	4	2.5	140.00
Excavation of Foundations....					514.50

<i>Filling in Foundations.</i>	Number.	Length			Total Feet.
Sluice-wall .	1	14	2.5	3.5	122.50
Wing-walls.	2	3	1.5	2	18.00
Do. do. .	2	3	1	1	6.00
Apron . . . .	1	14	4	1	56.00

Total filling in Foundations . . . . 202.50

<i>Superstructure.</i>	Number	Length	Breadth	Depth.	Total Feet.
Sluice-wall .	1	12	2	3.5	84.00
Do. .	2	3	2	1.5	18.00
Wing-walls .	2	3	1.5	7	63.00
Do. .	2	9	1	7	126.00
Total Cubic feet of Superstructure . . . .					291.00

<i>Cut-stone Work.</i>	Number.	Length.	Breadth.	Depth.	Total Feet.
Facing sides and sills of sluices . .	1	9	2	..	18.00
Total Cut-stone work . . . .					18.00

<i>Wood Work.</i>	Number	Length	Breadth	Total Feet.
Gates to sluices . . . . .			2.5    2.5	2.08

Total Wood work . . . . 2.08



## ABSTRACT.

		<i>Rs. a. p.</i>
514·5	Cubic feet Excavation, at 12 annas per 100 cubic feet	3 13 9
202·5	Cubic feet Filling Foundation, at 12 rupees per 100 cubic feet	24 4 10
291·00	Cubic feet Superstructure, at 14 rupees per 100 cubic feet	40 11 10
18 00	Superficial feet Cut-Stone work, at 25 rupees per 100 square feet.	4 8 0
2·08	Cubic feet Teakwood, at Rs. 4 per cubic foot	8 5 1
	Rupees	81 11 6
	Added 5 per-cent	4 1 4
	Grand Total . . . Rupees	<hr/> 86 0 10

A. JACOB,  
Assistant Suptg. Engineer for Irrigation.

ESTIMATE framed by Mr. A. JACOB, Assistant Superintending Engineer for Irrigation, of the probable Cost of Constructing a Masonry Escape of two openings according to General Drawing No. 2, Yerla Irrigation Works.—Amount Rs. 111.

#### GENERAL DESCRIPTION.

The Escape to have two openings or sluice-gates 2 feet wide by 3 feet deep, each opening being 3 feet apart. The wall of Escape to be continued 3 feet beyond sluice, with its crest at the same level as the crest of sluice. Beyond that point the wing-wall to be carried with a thickness of one foot 15 feet into the bank of canal 3 feet higher than crest of sluice or 2 feet higher than flood level. The sluice-wall to be 2 feet thick. The foundations of sluice-wall to be  $3\frac{1}{2}$  feet deep. An apron to be placed on outer side of sluice 4 feet wide and 1 foot deep.

#### Construction.

Foundations and Superstructure to be of uncoursed rubble masonry and chunam; facing to sides and silts of sluices to be of third sort cut-stone.

#### MEASUREMENTS.

	Number.	Length.	Breadth.	Depth.	Total Feet.
<i>Excavating Foundations.</i>					
Sluice-wall .....	1	19	2.5	3.5	166.25
Wing do. ....	2	12	1.5	7	252.00
Apron.....	1	19	4	2.5	190.00

Total Cubic feet of Excavation.. 608.25

*Filling in Foundations.*

	Number.	Length.	Breadth.	Depth.	Total Feet.
Sluice-wall .....	1	19	2.5	3.5	166.25
Wing do. ....	2	3	1.5	2	18.00
Do. do. ....	2	3	1	1	6.00
Aprons.. ....	1	19	4	1	76.00
Total Cubic feet of filling in Foundations....					266.25

*Superstructure.*

	Number.	Length.	Breadth.	Depth.	Total Feet.
Sluice-wall .....	1	15	2	3.5	105.00
Do. do .....	2	3	2	1.5	18.00
Wing-walls.....	2	3	1.5	7	63.00
Do. do .....	2	9	1	7	126.00
Cubic feet of Superstructure...					312.00

*Cut-stone Work.*

	Number.	Length.	Breadth.	Depth.	Total Feet.
Facing of sides and silts of sluices..	2	9	2	..	36
Total Square feet of Cut-stone work....					36

*Wood Work.*

	Number.	Length.	Breadth.	Depth.	Total Feet.
uices .....	2	4	2.5	2.5	4.16
Total Cubic feet of Wood-work....					4.16

## ABSTRACT.

		<i>Rs.</i>	<i>a.</i>	<i>p.</i>
608·25	Cubic feet of excavating Foundation, at 12 annas per 100 cubic feet	4	8	11
265·25	Cubic feet filling in Foundations, at 12 rupees per 100 cubic feet	31	15	2
312·00	Cubic feet Superstructure, at 14 rupees per 100 cubic feet	43	10	10
36·00	Square feet Cut-stone work, at 25 rupees per 100 square feet .....	9	0	0
4·16	Teakwood Shutters, at 4 rupees each cubic foot.	16	10	3
		<hr/>		
		Rupees	105	13 2
<i>Add</i> —Contingencies at 5 per-cent....			5	4 8
Total....Rupees			111	0 0

• A JACOB,  
Assistant Suptg. Engineer for Irrigation.

ESTIMATE framed by Mr. A. JACOB, Assistant Superintending Engineer for Irrigation, Sattara, of the probable Cost of Constructing an Escape of three openings according to General Drawing No. 3, Yerla Irrigation Works.—Amount Rs. 136.

### GENERAL DESCRIPTION.

The Escape to have three openings or sluice-gates 2 feet wide by  $3\frac{1}{2}$  feet deep, each opening being 3 feet apart. The wall of Escape to be continued 3 feet beyond sluices, with its crest at the same level as crest of sluices. Beyond that point the wing-wall to be carried with a thickness of 1 foot 15 feet into the bank of canal 3 feet higher than crest of sluice or 2 feet above flood level. The sluice-wall to be 2 feet thick. The foundations of sluice-wall to be  $3\frac{1}{2}$  feet deep. Apron to be placed on outer side of sluice 4 feet wide and 1 foot deep.

### CONSTRUCTION.

Foundations and Superstructure to be of uncoursed rubble masonry, and chunam facing to wall; sides and silts of sluices to be of third sort cut-stone.

### MEASUREMENTS.

<i>Excavating Foundations.</i>	Number	Length.	B.	Depth.	Total Feet.
Sluice-wall .	1	24	2.5	3.5	210.00
Wing-walls .	2	12	1.5	7	252.00
Apron . . . .	1	24	4	2.5	240.00

Cubic feet of excavating Foundations . . . . 702.00

*Filling in Foundations.*

	Number.	Length.	Breadth.	Depth.	Total Feet.
Sluice-wall .....	1	24	2.5	3.5	210.00
Wing-walls .....	2	3	1.5	2	18.00
Do. ....	2	3	1	1	6.00
Apron .....	1	24	4	1	96.00
Total Cubic feet of filling in Foundation....					330.00

*Superstructure.*

	Number.	Length.	Breadth.	Depth.	Total Feet.
Sluice-wall .....	1	18	2	3.5	126.00
Do. ....	2	3	2	1.5	18.00
Wing-walls .....	2	3	1.5	7	63.00
Do. ....	2	9	1	7	126.00
Total Cubic feet of Superstructure....					333.00

*Cut-stone Work.*

	Number.	Length.	Breadth.	Depth.	Total Feet.
Facings of sides and silts of sluices.	3	9	2	..	54
Total Square feet of Cut-stone work....					54

*Wood Work.*

	Number.	Length.	Breadth.	Depth.	Total Feet.
Gates of sluices .....			2.5	2.2	6.52
Total Cubic feet of Wood-work....					6.52

## ABSTRACT.

		<i>Rs.</i>	<i>a.</i>	<i>p.</i>
702	Cubic feet Excavation, at 12 annas per 100 cubic feet .....	5	4	3
330	Cubic feet filling Foundation, at 12 rupees per 100 cubic feet .....	39	9	7
333	Cubic feet Superstructure, at 14 rupees per 100 cubic feet .....	46	9	11
54	Square feet Cut-stone work, at 25 rupees per 100 square feet .....	13	8	0
6·25	Cubic feet Wood-work, at 4 rupees per foot	25	0	0
	<b>Rupees</b>	129	15	9
	<i>Add</i> —Contingencies at 5 per-cent....	6	8	0
	<b>Total....Rupees</b>	136	0	0

A. JACOB,  
Assistant Suptg. Engineer for Irrigation,

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ESTIMATE framed by Mr. A. JACOB, Assistant Superintending Engineer for Irrigation, Sattara, of the probable Cost of Constructing an Aqueduct of one arch of 30 feet span on the Yerla Irrigation Works in the Sattara districts.—Amount Rs. 1,769.

#### GENERAL DESCRIPTION.

The Aqueduct to consist of one segmental arch of 30 feet span and  $7\frac{1}{2}$  rise arch ring to be 1' 9" thick. The abutments to have a thickness at base of 5' 6" battering, at the rate of 1 in 4 at the back. The backing to be carried up to the level of the entrados; wing-wall to be carried 20 feet into the canal banks with a curve, and to have a butt on the inner side of 1 in 4.

#### CONSTRUCTION.

Excavation of Foundation..Moorum.  
 Filling Foundation...●....Uncoursed rubble and chunam.  
 Superstructure.....Coursed rubble and chunam.  
 Arching .....Slabs set in chunam.  
 Centering.....Stone and mud.

#### MEASUREMENTS.

<i>Excavation.</i>		Number.	Length.	Breadth.	Depth.	Solid Feet.
Abutments.....	.....	2	6·5	5·5	4·5	321·75
Wings, lower part .....	.....	4	9	5·5	8·5	1,683·00
Do. upper part .....	.....	4	11	3·5	5	770·00
Newels .....	.....	4	2	2	5·5	88·00
Total Cubic feet of Excavation....						2,862·75



*Filling in Foundation.*

	Number.	Length.	Breadth.	Depth.	Solid Feet.
Abutments .....	2	8	5	3	240
Wings, lower portion .....	4	9	4.5	5	810
Do. upper portion .....	4	11	2.5	3	330
Newels .....	4	2	2	4	64
Total Cubic feet filling in Foundation....					1,444

*Superstructure.*

	Number.	Length.	Breadth.		Solid Feet.
Abutments .....	2	8	4	11	704
Wing walls, lower part .....	4	9	3	20	1,160
Do. upper part .....	4	11	2	11	968
Newels .....	4	2	2		112
Spandril spaces .....	4	48	2		384
Parapet, high portion .....	4	5.5	1.5	4	132
Do. lower portion .....	2	20	1.5	1.5	90
Total Cubic feet of Superstructure....					4,550

*Backing.*

	Number.		Breadth	Solid Feet.
Backing over arches .....	2		45.5	455
Total Cubic feet of Backing....				455

*Concrete.*

	Number.	Length.	Breadth.	Depth.	Solid Feet.
Concrete in bottom of Channel ..	1	34	6	.5	102
Total Cubic feet of Concrete....					102

*Arching*

Arching

Number.	Length.	Breadth.	Depth.	Solid Feet.
1	64	..	9	576
Cubic feet of Arching....				576

*String Course.*

String course

Number	Length	Running Feet.
	68	68
Running feet of String Course....		68

*Blocking Course.*

Blocking course .....

Number.	Length.	Running Feet.
1	26	26
Running feet of Blocking Course....		26

*Coping.*

Coping over parapet wings .

Number.	Length.	Running Feet.
2	72	144
Running feet of Coping....		144

*Centering.*

Stone and mud .....

Number.	Length.	Breadth.	Depth.	Solid Feet.
1	Area. 255.57		9	2,300
Cubic feet of Centering . . . .				2,300

*Newels.*

Number.

Newels caps .

*Plastering.*

Chunam plaster .....

Number.	Length.	Breadth.	Square Feet.
1	34	6	204
Square feet of Plastering....			204

## ABSTRACT.

		<i>Rs.</i>	<i>a.</i>	<i>p.</i>
2,863	Cubic feet Excavation in moorum, at 12 annas per 100 cubic feet .....	21	7	6
1,444	Cubic feet Filling Foundation, at 12 rupees per 100 cubic feet .....	173	4	5
4,550	Cubic feet Superstructure, at Rs. 14 per do. ..	637	0	0
455	Do. Backing, at Rs. 12 per 100 cubic feet.	54	9	7
576	Do. Arching, at Rs. 25 per do. ..	144	0	0
102	Do. Concrete, at Rs. 10 per do. ..	10	3	2
2300	Do. Stone and Mud Centering, at Rs. 6 per 100 cubic feet .....	138	0	0
68	Running feet String Course, at 2 rupees per 1 running foot. ....	136	0	0
26	Do. Blocking, at Rs. 2 per do. ....	52	0	0
144	Do. Coping to Parapet, at Rs. 2 per do.	288	0	0
4	Newels Caps, at 5 rupees each .....	20	0	0
....	Starling Caps .....			
204	Square feet Plastering at 5 rupees per 100 square feet .....	10	3	2
Rupees		1,684	11	10
Add—Contingencies 5 per-cent..		84	3	4
Total....Rupees		1,769	0	0

A. JACOB,  
Assistant Suptg. Engineer for Irrigation.

ESTIMATE framed by Mr. A. JACOB, Assistant Superintending Engineer for Irrigation, Sattara, of the probable Cost of Constructing an Aqueduct of 40 feet span on the Yerla Irrigation works in the Sattara districts.—Amount Rs. 2,171.

#### GENERAL DESCRIPTION.

The Aqueduct to consist of one span of 40 feet with a rise of 10 feet Arching to be 2' 3" thick. The abutments to have a thickness at base of 7 feet; battering at the rate of 1 in 4 at the back. The backing of the arch to be carried up level with the extrados of the arch. The wings to be curved and carried 20 feet into the channel bank, battering at the back at the rate of 1 in 4. Parapets to be 4' 3" high at the ends and 2 feet in the centre, with a thickness throughout of 1' 6."

#### CONSTRUCTION.

Foundations. . . . . Moorum.  
 Superstructure. . . . . Coursed rubble.  
 Filling Foundations. . . . . Uncoursed rubble.  
 Arching . . . . . Slabs set in chunam.  
 Newels Caps, Blocking, and  
 Springing Course . . . . . Roughly dressed.

#### MEASUREMENTS.

<i>Excavation.</i>	Number		Breadth		Solid Feet.
Abutments . . . . .	2	7	7	4	392
Wings, lower part .	4	10	6	10	2,400
Do. upper part .	4	11	3 5	5 5	847
Newels . . . . .	4	2	2	6	96

Cubic feet of Excavation. . . . . 3,735

*Filling Foundations.*

	Number.	Length.	Breadth.	Depth.	Solid Feet.
Abutments .....	2	7	7	2	196
Wings, lower part .....	4	10	5.25	6	1,260
Do. upper part .....	4	11	3.25	4	572
Newels .....	4	2	2	4	64
Cubic feet of Filling Foundations....					2,092

	Num		Depth.	Solid Feet.
Abutments .....	2	5.25	12	882
Wings, inner portions .....	4	10	16	2,240
Do. end portions ..	4	11	1.75	616
Newels .....	4	2	8	128
Area				
Spandril spaces .....	4	77	1.5	462
Parapet walls, ends .....	4	5	4.25	12.57
Do. do. middle part	2	30	2	180

Cubic feet of Superstructure.... 4,635.5

*Backing.*

	Number.	Length.	Breadth.	Depth.	Solid Feet.
Backing over arches .	2	$\frac{24 \times 3.25}{2}$		6	468
Cubic feet of Backing....					468

*Arching.*

Arching

Number.	Length.	Breadth.	Depth.	Solid Feet.
	Area.			
1	109·5		9	985·5
Cubic feet of Arching....				985·5

*Centering.*

Stone and mud.

Number.	Length.	Breadth.	Depth.	Solid Feet.
1	Area. 429·6		9	3,866·4
Cubic feet of Centering....				3,866·4

*String Course.*

String course .....

Number.	Length.	Running Feet.
..	..	88
Running feet of String Course....		88

*Springing Course.*

Springing course .....

Number.	Length.	Running Feet.
..	..	26
Running feet of Springing Course....		26

	<i>Newels.</i>	Number.
Newels caps		4
		4

	Number.	Length.	Breadth.	Depth.	Solid Feet.
<i>Concrete.</i> Concrete in bottom of channel...	1	48	6	5	144
Cubic feet of Concrete....					144

	Number.	Length.	Breadth.	Square Feet.
<i>Plastering.</i> Bottom of channel .....	1	48	6	288
Square feet of Plastering ....				288

	Number.	Length.	Running Feet.
<i>Coping.</i> Parapet and wing walls. ....	2	82	164
Running feet of Coping .....			164



## ABSTRACT.

		<i>Rs.</i>	<i>a.</i>	<i>p.</i>
3,735	Cubic feet Excavation, at 12 annas per 100 cubic feet .....	28	0	2
2,092	Cubic feet Filling Foundation, at 12 rupees per 100 cubic feet .....	251	0	7
4,635.5	Cubic feet Superstructure, at 14 rupees per 100 cubic feet .....	648	15	6
468	Cubic feet Backing, at 12 rupees per 100 cubic feet .....	56	2	6
*985.5	Cubic feet Arching, at 25 rupees per 100 cubic feet .....	246	6	0
3,866.4	Cubic feet Centering Stone and Mud, at 6 rupees per 100 cubic feet.....	231	15	8
88	Running feet String Course, at 2 rupees per 1 running foot .....	176	0	0
26	Running feet Springing Course, at 2 rupees per 1 running foot .....	52	0	0
164	Running feet Coping, at 2 rupees per 1 running foot .....	328	0	0
144	Cubic feet Concrete, at 10 rupees per 100 cubic feet .....	14	6	4
288	Square feet Plastering, at 5 rupees per 100 square feet .....	14	6	4
	Newels Caps, at 5 rupees each	20	0	0
	Rupees	2,067	5	1
	Add—Contingencies 5 per-cent....	103	5	10
	Total... Rupees	2,171	0	0

A. JACOB,  
Assistant Suptg. Engineer for Irrigation.

**ESTIMATE framed by Mr. A. JACOB, Assistant Superintending Engineer for Irrigation, Sattara, of the probable expense for Constructing an Aqueduct of three Arches of 20 feet span each on the Yerla Irrigation works in Sattara Districts.—Amount Rs. 3,261.**

#### GENERAL DESCRIPTION.

The Aqueduct to consist of three segmental arches of 20 feet span each, with a rise of 5 feet. Arch ring to be 1 foot 3 inches thick. The abutments to have a thickness at base of 5 feet 6 inches, battering at the rate of 1 in 4 at the back. The backing to be carried up level with the extrados of the arches. The wing-walls to be carried 25 feet into the bank of channel with a curve. Parapet-walls to be 4 feet 3 inches high at the ends and 1 foot 9 inches at centre, the thickness throughout being 1 foot 6 inches.

#### CONSTRUCTION.

Excavation of Foundations. . . Moorum.

Filling Foundations . . . . . Uncoursed rubble and chunam.

Superstructure . . . . . Coursed rubble and chunam.

Arching . . . . . Slabs set in chunam.

Centering . . . . . Stone and mud.

#### MEASUREMENTS.

<i>Excavation</i>	Number.	Length.	Breadth.	Depth.	Solid Feet.
		Area.			
Piers . . . . .	2	39.02		2.5	195.1
Abutments . . . . .	2	6.5	5.5	8	• 572.0
Wings, lower part . . . . .	4	9	5.5	12	2,376.0
Do. upper part . . . . .	4	11	3.5	7	1,078.0
Newels . . . . .	4	2	2	7.5	120.0
Cubic feet of Excavation . . . .					4,341.1

*Filling Foundations.*

	Number.	Length.	Breadth.	Depth.	Solid Feet.
		Area.			
Piers .....	2	39.02		2	156.08
Abutments .....	2	6.5	5	5	325.00
Wings, lower portion .....	4	9	4.5	9	1,458.00
Do. upper portion .....	4	11	2.5	4	440.00
Newels .....	4	2	2	6.5	104.00

Cubic feet Filling Foundations.... 2,483.08

*Superstructure.*

	Number.	Length.	Brea	Depth.	Solid Feet.
		Area.			
Piers .....	2	39.02		7	546.28
Abutments .....	2	9	3.5	8	504.00
Wing-walls, lower part .....	4	10	2.5	11	1,100.00
Do. upper part .....	4	10	2	7	560.00
Newels .....	4	2	2	4.5	72.00
Spandrils .....	6	51	15	1.5	6,885.00
Parapet, high portion .....	4	10	1.5	4	240.00
Do. lower portion .....	2	47	1.5	1.5	211.05

Cubic feet of Superstructure.... 10,118.78

*Backing.*

	Number.	Length.	Breadth.	Depth.	Solid Feet.
		Area.			
Backing over arches .....	3	51	6	..	918

Cubic feet of Backing.... 918

*Concrete.*

	Num	Length	Bread	Depth.	Solid Feet.
	Area.				
Concrete in bottom of channel....	1	74	6	.5	222
Cubic feet of Concrete....					222

*Arching.*

	Number.	Length.	Breadth.	Depth.	Solid Feet.
	Area.				
Arching .....	3	36.81		9	993.87
Cubic feet of Arching....					993.87

*String Course.*

	Number.	Length.	Running Feet.
String course .....	1	88	88
Running feet of String Course....			88

*Blocking Course.*

	Number.	Length.	Running Feet.
Blocking course.		31	31
Running feet of Blocking Course....			31

*Newels.*

Newels caps .....

Number.

4

4

*Coping.*

Coping of parapet and wings.....

Number

2

Length.

110

Running  
Feet.

220

Running feet of Coping....

220

*Starling.*

Starling caps .....

Number.

2

2

*Centering.*

Of stone and mud .....

Number.

..

Length.

..

Breadth.

..

Depth.

...

Solid Feet.

3,958 33

Cubic feet of Centering....

3,958-33

		Number.	Length.	Breadth.	Square Feet.
<i>Plastering.</i>					
Of chunam .....	•	1	74	6	444
Square feet of Plastering....					444

## ABSTRACT.

		<i>Rs.</i>	<i>a.</i>	<i>p.</i>
4,341	Cubic feet Excavation, at 12 annas per 100 cubic feet .....	32	8	11
2,483	Cubic feet Filling Foundation, at 12 rupees per 100 cubic feet .....	297	15	4
10,119	Cubic feet Superstructure, at 14 rupees per 100 cubic feet .....	1,416	10	6
918	Cubic feet Backing, at 12 rupees per 100 cubic feet .....	110	2	6
994	Cubic feet Arching, at 25 rupees per 100 cubic feet .....	248	8	0
222	Cubic feet Concrete, at 10 rupees per 100 cubic feet .....	22	3	2
88	Running feet String Course, at 2 rupees per 1 running foot .....	176	0	0
31	Running feet Blocking, at 2 rupees per 1 running foot .....	62	0	0
220	Running feet Coping to Parapet, at 2 rupees per 1 running foot .....	440	0	0
4	Newels Caps, at 5 rupees each .....	20	0	0
2	Starling Caps, at 10 rupees each .....	20	0	0
3,958	Cubic feet Centering Stone and Mud, at 6 rupees per 100 cubic feet .....	237	7	8
444	Square feet Plastering, at 5 rupees per 100 square feet .....	22	3	2
Rupees		3,105	11	3
<i>Add—Contingencies 5 per-cent....</i>		155	4	6
Total....Rupees		3,261	0	0

A. JACOB,  
Assistant Suptg. Engineer for Irrigation.

**ESTIMATE** framed by Mr. A. JACOB, Assistant Superintending Engineer for Irrigation, Sattara, of the probable Cost of Erecting a Masonry Escape according to General Drawing No. 7, Yerla Irrigation works in the Sattara districts.—Amount Rs. 1,267.

#### GENERAL DESCRIPTION.

The Escape to be 108 feet long, and will consist of an overfall weir pierced with 10 rectangular openings  $3' \times 3'$  each. These openings to be provided with shutters to close them in heavy freshes. The height of the Escape will be 10 feet, with a mean thickness of  $3'6''$  vertical on the lower face and slopped on the upper. The foundations will be protected by an apron 120 feet long by 10 feet wide and 2 feet thick.

#### CONSTRUCTION.

Foundations.....Mann or indurated clay.  
 Superstructure.....Uncoursed rubble,  
 Sills of Openings.....Dressed stone.  
 Shutters .....Teak plank.

#### MEASUREMENTS.

<i>Excavation.</i>	Number.	Length.	Breadth.	Depth.	Solid Feet.
Lower course. ....	1	100	4.5	2.0	900.0
Second do. ....	1	120	4.5	1.75	945.0
Apron ..... ..	1	120	10.0	1.75	2,100.0
Third course . ....	1	100	4.5	1.25	562.5
Fourth do. . ....	1	34	4.5	2.0	306.0
End portions . ....	2	12	2.5	3.0	180.0
Do. , do. .. ....	2	10	4.0	1.0	80.0
Cubic feet of Excavation....					5,073.5

<i>Superstructure.</i>	Number.	Length.	Breadth.	Depth.	Solid Feet.
Lower course.....	1	100	4.5	2.0	900
Second do. ....	1	120	4.0	2.0	960
Apron.....	1	120	10.0	2.0	2,400
Third course .....	1	140	3.5	2.0	980
Fourth do. ....	1	140	3.0	1.75	735
Do. end portions.....	2	10	1.0	2.0	40
Portions between openings .....	9	6	2.5	2.0	270
Ends of same course.....	2	28	2.5	2.0	280
Wings of escape.....	2	18	2.5	4.0	360
Do. ends .....	2	10	1.0	6.0	120
Cubic feet of Superstructure....					7,045

<i>Dressed Stone.</i>	Number.	Length.	Breadth.	Square Feet.
Sills for shutters .....	10	9	1	90
Square feet of Dressed Stone....				90

<i>Chunam Plaster.</i>	Number.	Length.	Breadth.	Square Feet.
Crest of escape .....	1	110	3.5	385
Square feet of Plastering....				385

<i>Shutters.</i>	Number.
Teakwood shutters .....	10
	10



## ABSTRACT.

		Rs.	a.	p.
5,073-5	Cubic feet Excavation, at 12 annas per 100 cubic feet.....	38	0	9
7,045	Cubic feet Superstructure, at 14 rupees per 100 cubic feet.....	986	4	9
90	Square feet Dressed Store, at 15 rupees per 100 square feet .....	13	8	0
385	Square feet Plastering, at 5 rupees per 100 square feet .....	19	4	0
10	Teakwood Shutters, at 15 rupees each .....	150	0	0
		<hr/>		
		Rupees	1,207	1 6
Add—Contingencies 5 per-cent....			60	5 7
		<hr/>		
Total.... Rupees			1,267	0 0
		<hr/>		

A. JACOB,  
Assistant Suptg. Engineer for Irrigation.

No. 1 OF 1863-64.

SATTARA COLLECTORATE. { III.—Public Improvements.  
K.—Agricultural.  
I.—Irrigation Canals.

**ESTIMATE framed by Mr. A. JACOB, Assistant Superintending Engineer for Irrigation, Sattara, of the probable Expense for Constructing an Aqueduct of five Arches of 40 feet span each on the Yerla Irrigation works in the Sattara districts.—Amount Rs. 7,806.**

## GENERAL DESCRIPTION.

The Aqueduct to consist of five segmental arches of 40 feet span and 8 feet rise. Arch ring to be 2 feet 6 inches thick. The abutments to have a thickness at base of 7 feet; battering at the rate of 1 in 4 at the back. The backing of the arches to be carried up level with the extrados of arches. The wing-walls to be carried 25 feet into the bank of the channel, with a splay of  $1\frac{1}{2}$  to 1, and to batter on the face at 1 in 6. Parapet-walls to be 4 feet 3 inches high at the ends and 2 feet at centre, the thickness throughout being 1 foot 6 inches.

## CONSTRUCTION.

Excavation of Foundations..Rock  
 Filling Foundations.....Uncoursed rubble and chunam.  
 Superstructure.....Coursed rubble and chunam.  
 Arching .....Slabs set in chunam.  
 Centering.....Stone and mud.  
 Coping String Course and  
 Springing Course. ....To be chisel-drafted.

## MEASUREMENTS.

*Excavation*

Piers .....

Abutments.....

Wing-walls.....

Number.	Length.	Breadth.	Depth.	Solid Feet.
	Area.			
4	85.5		1.75	598.5
2	5	7.0	2.5	175.0
4	28	7.5	3.5	2,940.0
Cubic feet of Excavation....				3,713.5

*Excavation in Earth.*

Abutments.....

Wing-walls.....

Number.	Length.	Breadth.	Depth.	Solid Feet.
1	5	7.0	3.5	122.5
4	28	7.5	5.5	4,620.0
Excavation in Earth....				4,742.5

*Filling Foundations.*

	Number.	Length.	Breadth.	Depth.	Solid Feet.
Abutment .....	1	5·0	6·5	4	130·0
Wing-walls .....	2	28·5	6·6	6	2,257·2
Filling Foundations....					2,387·2

*Superstructure.*

	Number.	Length.	Breadth.	Depth.	Solid Feet.
Piers .....	4	Area. 85·5		9·25	3,163·5
Wing-walls .....	2	29	4·0	14·0	3,248·0
Do. ....	2	29	5·0	20·0	5,800·0
Spandrels .....	10	Area 157·5		1·5	2,362·5
Parapet, high portion .....	4	72	1·5	4·0	1,728·0
Do. low portion.....	2	94	1·5	2·75	775·5
Cubic feet of Superstructure....					17,077·5

*Concrete.*

	Number.	Length.	Breadth.	Depth.	Solid Feet.
Concrete in bottom of channel	1	236	6	0·5	708
Cubic feet of Concrete....					708

*Backing.*

Backing over arches.....

Number.	Length.	Breadth.	Depth.	Solid Feet.
	Area.			
5	157·5		6	4,725
Cubic feet of Backing....				4,725

*Arching.*

Archings.

Number.	Length.	Breadth.	Depth.	Solid Feet.
	Area.			
5	114·45		9	5,150·25
Cubic feet of Arching....				5,150·25

*String Course.*

String course ..

Number.	Length.	Running Feet.
236		472
Running feet of String Course....		472

*Springing Course.*

Springing course

Length.	Running Feet.
186	186

Running feet of Springing Course.... 186

*Starling Caps.*

Starling caps

Number.
..
4
4

*Centering.*

Of stone and mud

Number.	Length.	Breadth.	Depth.	Solid Feet.
..	..	..	..	22,458
Cubie feet of Centering.....				22,458

*Coping.*

To parapet chisel-drafted .....

Number.	Length.	Breadth.	Depth.	Solid Feet.
..	..	..	..	..
				..

## ABSTRACT.

		<i>Rs. a. p.</i>
3,713·5	Cubic feet Excavation in rock, at Rs. 2-8 per 100 cubic feet .....	92 13 4
4,742·5	Cubic feet Excavation in earth, at 12 annas per 100 cubic feet .....	35 9 1
2,387·2	Cubic feet Filling Foundation, at 12 rupees per 100 cubic feet .....	286 7 5
17,077·5	Cubic feet Superstructure, at 14 rupees per 100 cubic feet.....	2,390 13 7
4,725·0	Cubic feet Backing, at 12 rupees per 100 cubic feet .....	567 0 0
5,150·2	Cubic feet Arching, at 25 rupees per 100 cubic feet .....	1,287 9 0
708·0	Cubic feet Concrete, at 10 rupees per 100 cubic feet .....	70 12 9
22,458·0	Cubic feet Stone and Mud Centering, at 6 rupees per 100 cubic feet .....	1,347 7 8
472·0	Running feet String Course, at 2 rupees per running foot.....	944 0 0
186·0	Running feet Blocking, at 2 rupees per 1 running foot .....	372 0 0
	Running feet Coping to Parapets, at per 100 running feet .....	....
4·0	Starling Caps, at 10 rupees each .....	40 0 0
Rupees		7,434 8 10
<i>Add—Contingencies 5 per-cent....</i>		371 11 7
Total....Rupees		7,806 0 0

A. JACOB,  
Assistant Suptg. Engineer for Irrigation.

**ESTIMATE framed by Mr. A. JACOB, Assistant Superintending Engineer for Irrigation, Sattara, of the probable Cost of Constructing an Aqueduct of six Arches of 15 feet span each on the Yerlu Irrigation works in the Sattara districts.—Amount Rs. 3,100.**

### GENERAL DESCRIPTION.

The Aqueduct to consist of six segmental arches of 15 feet span each and 4 feet rise. Arch ring to 1 foot 6 inches thick. The abutment to have a thickness of 4 feet. Backing of the arches to be brought up level with the extrados. Wing-walls to be carried 18 feet into the canal bank, with a splay of  $1\frac{1}{2}$  to 1. Batter on the face 1 in 8. Parapet to be 4 feet 3 inches high.

### CONSTRUCTION.

Excavation of Foundation .. Gravel and moorum.  
 Filling Foundation ..... Uncoursed rubble.  
 Superstructure ..... Coursed rubble.  
 Arching ..... Slabs set in chunam.  
 \*Centering..... Stone and mud.  
 String Course and Springing  
     Course ..... Roughly dressed stone.

### MEASUREMENTS.

<i>Excavation in Gravel.</i>	Number.	Length.	Breadth.	Depth.	Solid Feet.
Piers .....	5	14.0	5.5	7.6	2,926.0
Abutments ..... North	1	8.7	6.5	6.5	367.57
Do. .... South	1	8.7	6.5	6.25	353.43
Wing-walls ..... North	2	19.0	5.5	8.0	1,672.00
Do. .... South	2	19.0	5.5	11.5	2,403.5
Cubic feet of Excavation....					7,722.5

*Excavation in Moorum.*

	Number.	Length.	Breadth.	Depth.	Solid Feet.
Piers .....	5	14	5.5	1.3	500.5
Abutments .....	2	8.7	6.5	2	226.2
Wing-walls.....	4	19	5.5	2.25	940.5
Cubic feet of Excavation....					1,667.2

*Filling Foundation.*

	Number.	Length.	Breadth.	Depth.	Solid Feet.
Piers footings.....	5	12	4.5	2	540
Do. upper portion .....	5	11	3	5.5	907.5
Abutments footings .....	2	8.7	5.5	2	191.4
Do. upper portion .....	2	8.7	4	6	417.6
Wing-walls footings .....	4	18.75	5.25	2	787.5
Do. upper portion .....	4	18	3.86	6.25	1,737.0
Cubic feet of Filling Foundation....					4,581

*Superstructure.*

	Number.	Length.	Breadth.	Depth.	Solid Feet.
Piers .....	5	11	3	5.5	907.5
Wing-walls .....	4	18	2.5	8.25	1,485.00
Spandrels .....	12	Area. 35		1.5	630.00
Parapets.....	2	113	1.5	4.25	1,440.75
Cubic feet of Superstructure....					4,463.25



*Arching.*

Arching .....

Number.	Length.	Breadth.	Depth.	Solid Feet.
6	19.16	9	1.5	1,552
Cubic feet of Arching.....				1,552

*Backing.*

Backing over arches.....

Number.	Length.	Breadth.	Depth.	Solid Feet.
6	Area. 25		6	900
				900

*Concrete.*

In bottom of channel .....

Number.	Length.	Breadth.	Depth.	Solid Feet.
1	114	6	0.5	34
Cubic feet of Concrete....				342

*Springing Course.*

Springing Course .....

Number.	Length.	Running Feet.
..	..	168
Running feet of Springing Course.....		168

*String Course.*

	Number.	Length.	Running Feet.
String Course.....	..	..	221
Running feet of String Course....			221

*Plastering.*

	Number.	Length.	Breadth.	Square Feet.
Chunam plastering.....	..	117	6	702
Square feet of Plastering....				702

*Starling Caps.*

	Number.
Starling caps.....	5
	5

*Centering.*

	Number.	Length.	Breadth.	Depth.	Solid Feet.
Of stone and mud.....	..	..	..	..	5,239
Cubic feet of Centering....					5,239

## ABSTRACT.

		<i>Rs. a. p.</i>
7,722·5	Cubic feet Excavation of Foundation in Gravel, at 12 annas per 100 cubic feet .....	57 14 8
1,667·2	Cubic feet in Moorum, at Rs. 12 per 100 cubic feet .....	12 8 0
4,581	Cubic feet Filling Foundation, at Rs. 12 per 100 cubic feet .....	549 11 6
4,463·25	Cubic feet Superstructure, at Rs. 14 per 100 cubic feet.... ..	624 13 8
1,552	Cubic feet Arching, at Rs. 25 per 100 cubic feet.	388 0 0
400	Cubic feet Backing, at Rs. 12 per 100 cubic feet.	108 0 0
342	Cubic feet Concrete, at Rs. 10 per 100 cubic feet.	34 3 2
168	Running feet Springing Course, at Rs. 2 per 1 foot.....	336 0 0
221	Running feet String Course, at Rs. 2 per 1 foot.	442 0 0
702	Square feet Chunam Plastering, at Rs. 5 per 100 square feet .....	35 1 7
5	Starling Caps, at Rs. 10 each.....	50 0 0
5,239	Cubic feet Centering Stone and Mud, at Rs. 6 per 100 cubic feet .....	314 5 5
Rupees		2,952 10 0
<i>Add—Contingencies 5 per-cent....</i>		147 6 0
Total.... Rupees		3,100 0 0

A. JACOB,  
Assistant Suptg. Engineer for Irrigation.

## RECAPITULATION.

Number	Name of Work.	Amount.	Total.
	<i>Right Bank Channel.</i>	<i>Rs. a. p.</i>	<i>Rs. a. p.</i>
	Earthwork .....	34,756 14 5	34,756 14 5
1	Escape General Drawing No. 1..at	86 0 2	86 0 2
3	Do. do. do. No. 3..at	136 7 9	409 7 3
5	Aqueduct do. do. No. 4..at	1,768 15 0	8,844 11 0
6	Do. do. do. No. 6..at	3,261 0 2	19,566 1 0
2	Escape do. do. No. 7..at	1,270 14 0	2,541 12 0
	<i>Left Bank Channel.</i>		
8	Escapes General Drawing No. 1..at	86 0 2	688 1 4
2	Do. do. do. No. 2..at	111 2 8	222 5 4
4	Do. do. do. No. 3..at	136 7 9	545 15 0
5	Aqueduct do. do. No. 4..at	1,768 15 0	8,844 11 0
2	Do. do. do. No. 5..at	2,170 14 0	4,341 12 0
2	Do. do. do. No. 6..at	3,261 0 2	6,522 0 4
1	Do. Special do. No. 8..at	7,806 0 0	7,806 0 0
1	Do. do. do. No. 9..at	3,100 4 2	3,100 4 2
	Earthwork .....	36,373 9 4	36,373 9 4
1	Bundara, with head-works, flanking-walls, &c. complete.....	15,209 0 0	15,209 0 0
Total Estimate for the construction of a Bundara and two Irrigation Channels on the Yerla River .....			1,49,859 0 0

A. JACOB,  
Executive Engineer for Irrigation.

J. G. FIFE, Captain,  
Superintending Engineer for Irrigation.

No. 362 of 1863.

PUBLIC WORKS DEPARTMENT.

To the REVENUE COMMISSIONER S. D., Poona.

SIR,—I have the honour to forward a Report, with Plans, and Estimates amounting to Rs. 1,49,644, by Mr. Jacob, the Executive Engineer for Irrigation in the Sattara Collectorate, for the first section of a series of works it is proposed to carry out in the Yerla Valley.

2. Our attention was drawn to the Yerla Valley last season by the Collector as greatly demanding irrigation on account of the smallness and precariousness of the rainfall, and a list of proposals for small dams and irrigating channels was forwarded to us. This led to an examination of the valley by Mr. Jacob and myself, and the drawing up of a general plan of Irrigation, comprising all the works suggested to us, which proved satisfactory on inquiry, and providing for works to increase the River Yerla's perennial supply. This general plan is described by Mr. Jacob in his report. It is only necessary for me therefore to mention that it consists of a storage lake near the village of Nehr, and four or more sets of distributing works at intervals down the valley. With the exception of a short period employed in making a general examination for irrigational facilities in the Maun River and Neera River valleys, Mr. Jacob's whole time and that of the small establishment at his disposal has been devoted to the working out of the Yerla project.

3. Being the first season of the department, however, the whole of the work was not brought to quite a satisfactory conclusion. The distributing works have caused no difficulty, but the survey for the storage lake did not give us very satisfactory results, and there was not leisure for further investigation before out-door operations were interrupted by the monsoon. One of the difficulties in the lake was caused by the ground proving favourable only for the formation of a larger basin than the drainage during a season of less than average rainfall is likely to fill. During a year of drought therefore our lake would not fill, and considering that one of the objects of irrigation

works is to secure the country against drought and famine, the point is of more importance than a mere question of expense. Doubts have been expressed as to the rainfall guage on which our calculations are based, fairly representing the fall that may be relied upon at the head of the Yerla Valley, which is high and mountainous. I feel little doubt myself that the fall at the head of the valley is greater than that at Khanapoor, where the rain-guage has been kept for some years. This point is now being tested by the placing of another guage about the centre of the area that will drain into the proposed lake. In the meantime, however, I cannot of course submit the large project we contemplate. Further survey will be requisite before we can feel sure that we have arrived at the best means of storing water. The principle on which storage works should be made is certainly that they should ensure a full supply of water during a season of drought. Storage works so designed will also pay the best because during ordinary seasons they will be oftener replenished. I believe that by going furthur down the valley we shall obtain a site for a lake, not presenting, perhaps, such apparent facilities as that near Nehr, but really much more valuable from receiving the drainage of a larger area of country.

4. In the meantime Mr. Jacob has prepared a plan and estimate for a weir and two small distributing channels near Khatgoon to use up the present supply in the Yerla. These works have been selected from a great many for which surveys were made on account of their presenting the greatest facilities for construction, and I beg to recommend them for the sanction of Government. This section of works is complete in itself, and its execution will in no way affect the ultimate carrying out of the other works proposed.

5. The project has been carefully prepared, and I approve of it generally. I have appended some remarks to the estimate on certain details of construction which can be modified when the work is carried out. The alterations so slightly affect the cost that I have not thought it desirable to employ the time of Mr. Jacob and his establishment in preparing fresh plans.

6. The cost of the work is estimated after correction at Rupees 1,49,644, and the annual return at Rupees 15,623, or about 10·44

per-cent. I believe this will be deemed sufficiently remunerative. I should, however, mention that the rates recommended to be charged per acre by Mr. Chapman, the Collector, are really only about one-fourth as respects perennial, and one-half as respects rubbee and monsoon crops, of the rates willingly paid by the people in Khandeish. If the Khandeish rates be applied the return will become as follows:—

1,000 acres of perennial Irrigation, at 16 rupees per acre .....	Rs. 16,000
2,000 acres of eight months' Irrigation, at 6 rupees per acre .....	12,000
6,500 acres of four months' Irrigation, at 4 rupees per acre .....	26,000
	<hr/>
	54,000
<i>* Deduct 5 per-cent per annum on outlay of Rupees</i> 1,49,644 for maintenance and establishment ....	7,482
	<hr/>
	Annual Return...Rs. 46,518

This would be at the rate of 31·08 per-cent on the outlay.

7. I have not made these remarks with the view of disputing the wisdom of fixing low rates (a point on which I believe Mr. Chapman is perfectly right, as the people will be thus encouraged to use the water directly it is supplied), but merely to show that the real value of the project to the country is at least three times as great as those rates indicate, as proved by what the people in Khandeish actually willingly pay under similar circumstances.

8. If the project is sanctioned before the working season commences, one lakh of rupees may be advantageously expended upon it during the current year.

9. No chowky has been provided in the estimate for stores and for the shelter of the establishment during inclement weather. Such shelter is absolutely necessary to enable an officer or subordinate to visit the works at any season to correct anything that may be wrong both during the execution of the work and afterwards when it is brought into operation. The estimated cost of a chowky according

to plans lately submitted for Khandeish is Rs. 970, which should be added to the estimate for Rs. 1,49,644 now submitted, making a total of Rs. 1,50,614 to be sanctioned.

I have the honour to be, &c.

J. G. FIFE, Captain,

Superintending Engineer for Irrigation.

*Office of the Superintending Engineer for Irrigation,*

*Kirkee, 13th August 1863.*

#### REMARKS ON CONSTRUCTION.

The dam may be reduced in thickness till the mean thickness is equal to half the height.

2. The screen-walls at the heads of the channels may be reduced in thickness by one foot. The retaining-wall on the river side of each channel to be raised to act as a buttress to the screen-wall and assist in keeping out floods.

3. The parapets of the aqueducts generally to be increased in thickness by one foot. The retaining-wall in escapes to be similarly increased in thickness at the deep point in each section. .

4. The wing-walls of the aqueducts to be carried back from the abutments without a recess.

5. Cut-stone coping is provided for the aqueduct parapets, but a rounded coping of chunam plaster should be substituted as being, if anything, more serviceable than ordinary cut-stone work and much cheaper. The inside of parapets to be chunam-plastered to prevent leakage. A beam should be thrown across the entrance and tail of each aqueduct to prevent cattle crossing.

J. G. FIFE, Captain,

Superintending Engineer for Irrigation.



No. 2588 OF 1863.

PUBLIC WORKS DEPARTMENT.

From the REVENUE COMMISSIONER S. D.,

To the SECRETARY TO GOVERNMENT.

SIR,—I have the honour to submit herewith for the consideration of Government a letter from Captain Fife, Superintending Engineer for Irrigation, No 362, dated 13th August 1863, with its accompaniments, proposing the immediate commencement of an irrigational work of much importance in the Khuttao talooka of the Sattara collectorate.

2. If Government are satisfied with the proposed project in a scientific point of view, as I have no doubt they will be, though I can offer no opinion on its professional details, I hope they may be able to provide for the expenditure to which sanction is solicited by Captain Fife for the work which he proposes to accomplish in the current year. In the meanwhile I shall request Captain Fife to obtain from the Collector, if he should not have already done so, as accurate an account as can be obtained of the nature, ownership, and other particulars of the 12,800 acres of land which will become irrigable on the completion of the portion now proposed as a section of the more extensive project to be hereafter matured.

I have the honour to be, &c.

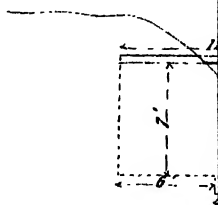
W. HART,

Revenue Commissioner S. D.

*Poona, 15th August 1863.*

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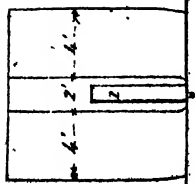
*Designed, drawn, and Estimated  
and Mr. A. Jacob, Exec.*



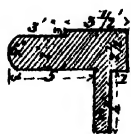
*(Signed:) J. G. Fife, Captain,  
Superintending Engineer  
for Irrigation.*

**Nº 1.**

*For 9 Nullas on Channels*

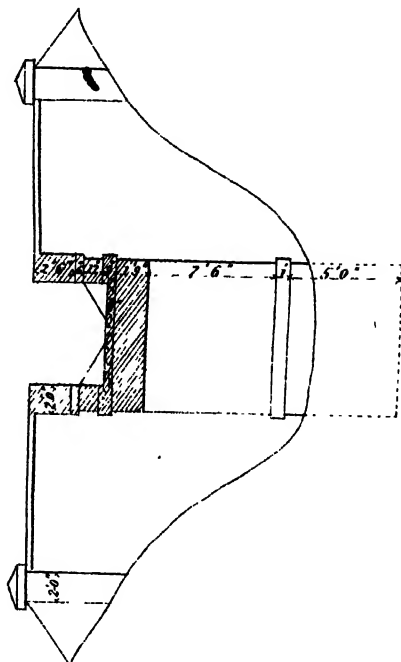


**CROSS SECTION.**





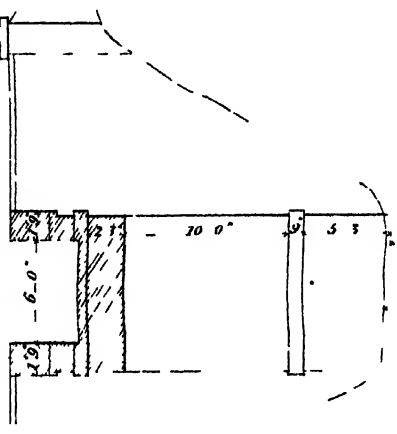
SECTION AT AB.



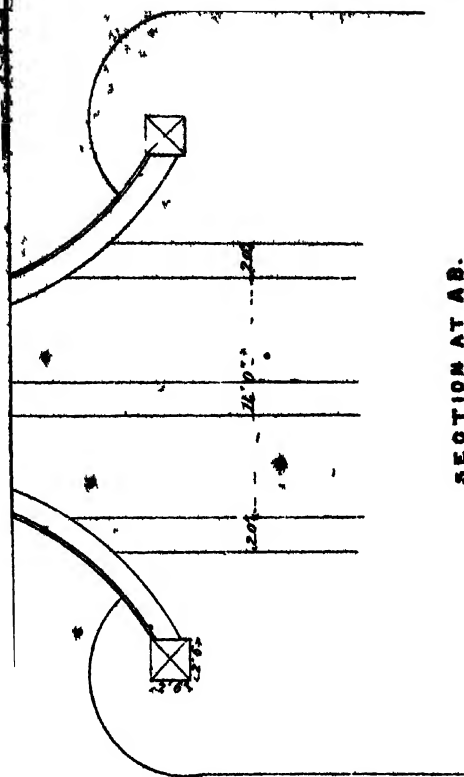


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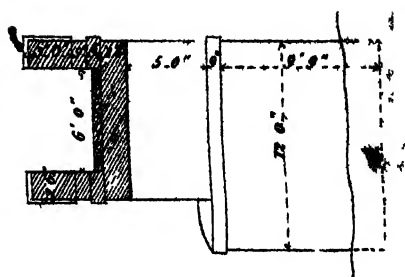
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SECTION AT AB.







**SELECTIONS FROM THE RECORDS OF THE BOMBAY  
GOVERNMENT.**

No. LXXXIV.—NEW SERIES.

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**P A P E R S**

RELATING TO THE

**COST OF WORKING THE SEVERAL BRANCHES**

OF

**RAILWAY TRAFFIC.**



**Bombay:**

PRINTED FOR GOVERNMENT

AT THE EDUCATION SOCIETY'S PRESS, BYCULLA.

---

1864.



No. 4023.

From Lieutenant Colonel J. P. BEADLE, R.E.,  
Offg. Secy. to the Govt. of India,  
To the SECRETARY to GOVERNMENT of BOMBAY  
in the Railway Department.

Railway.

PUBLIC WORKS DEPARTMENT,  
Fort William, 9th September 1863.

SIR,—The Government of India, having lately had its attention drawn to the subject of Railway Fares, considers that it would conduce to a proper apprehension of the real working of the present scales of Fares for the various classes of passengers, to call for Returns from all the Railways, showing in as exact detail as is practicable, the *actual expenses* of carrying a passenger of each class per mile, and I am accordingly instructed to request that you will, with the permission of the Honorable the Governor in Council, have the goodness to submit such a Return for the information of the Government of India. The actual cost of each passenger will consist of the share of the maintenance and traffic charges and of the locomotive charges apportioned to the dead weight carried in connection with each passenger of the several classes. From this will be seen what proportion of the fare of each class under existing circumstances is retained as profit, and to what extent a reduction of the fares must be compensated by an increase of numbers to yield the same net return. The type of such a calculation will be obtained in a Report by Colonel Baker, submitted to the Government of India in 1856, a copy of which was forwarded to the Government of Bombay with Public Works Department letter No. 5108, dated the 31st October 1856.

2. The economical transport of passengers of course mainly depends on the carriages being properly filled, and an analysis of the traffic, pointing out how far this is accomplished, will be a useful check on the working arrangements, and indicate whether the use of composite carriages is sufficiently attended to.

I have the honour to be, &c.

J. P. BEADLE, Lieut. Col., R.E.,  
Offg. Secy. to the Govt. of India.

## MEMORANDUM.

In reply to the letter from the Government of India, No. 4023, of the 9th September 1863, the undersigned has the honour to report, that none of the Railway Companies on this side of India have furnished the information necessary for the preparation in detail of tables showing the exact cost incurred in carrying different classes of goods and passengers.

2. Fresh calls will be made for the required information, but it is believed that no register is kept of the mileage travelled by vehicles, and without such a register it is impossible to ascertain, except approximately, the cost of working the several branches of Traffic.

3. From the papers in this office some data have been gathered for the half-year ending 30th June 1863, and the estimated cost of carrying passengers and goods on the three Bombay Railways roughly deduced.

4. The total dead weight hauled over one mile, excluding Engines and Brake Vans, on the Baroda Railway was as follows:—

Coaching .....	6,616,609 tons.
Goods .....	7,624,000 tons.

Total..... 14,240,611 tons.

### GROSS DEAD WEIGHT HAULED OVER BARODA RAILWAY.

Description.	Weight of Vehicles.	Average Mileage.	No. of Vehicles run.	Gross Dead Weight hauled over one Mile in Tons.
	Tons.	Miles	No.	Tons.
1st Class Carriages .....	7·8	180	377	529,308
Composite Carriages .....	7·8	180	365	494,460
2nd Class Carriages .....	7·35	180	374	484,002
3rd Class Carriages .....	7·2	180	3,321	4,304,016
Road Vans. ....	5·0	180	365	328,500
Horse Boxes .....	7·25	180	365	476,325
Waggons .....	5·0	160	9,530	7,624,000
Total....	....	....	....	14,240,611

5. The paying weight was as follows:—

Coaching .....	926,044 tons.
Goods.....	4,318,383 tons.

Total..... 5,244,427 tons.

**PAYING WEIGHT HAULED OVER BARODA RAILWAY.**

Description.	No. of Passengers.	Average Mileage.	Mean Weight, Tons.	Gross Weight in Tons conveyed over one Mile.
	No.	Miles.	Tons.	
1st Class Passengers.....	1,688	52	·075	6,575
2nd Class ditto .....	6,742	51	·0625	21,490
3rd Class ditto .....	400,916	41	·05	882,015
Horses .....	52,796	1	3	15,838
Parcels .....	..	....	126	126
Goods .....	....	85·25	50,374	4,294,383
Cattle .....	....	....	24,000	24,000
Total....	....	....	....	<u>5,244,427</u>

6. The total of the gross dead and paying loads is in round numbers 19½ millions of tons.

7. The expenditure for the half-year is returned at 2,54,000 Rupees. The nominal cost of haulage was therefore nearly 77 tons for the Rupee.

8. But it is notorious that the expenditure of the half-year was much understated. Maintenance cost more than 1,000 Rupees a mile, not Rs. 250 or nearer 1,83,000 than 46,287 Rs. The repair of rolling stock, the salaries of Establishments, and the issues of stores were charged to capital in far larger proportions than they should have been by a more correct division. Fully two lakhs were debited to capital that ought to have been defrayed by Revenue. Even the addition of this sum to the working expenses of the half-year will not increase the percentage those expenses bear to receipt to more than the percentage on the Great Indian Peninsula, and will still leave the percentage

15 per cent. below that on the Sind, although the Mileage receipts on those lines were respectively 5,017 and 5,333 Rs. to 3,770 Rs. on the Baroda.

9. The actual expenses of the half-year were nearer 4½ lakhs than 2,54,000, or in other words, every rate to be deducted from the Baroda account must be increased by 80 per cent. to get the prices at which work was probably performed, and the cost of haulage must be put down as nearer 43 than 77 tons for the Rupee.

10. By arranging the figures in a tabular form, and filling in the expenditure and receipts opposite the amount of haulage, Table A. the nominal cost of carrying each passenger and each ton of goods can be calculated.

Description of Traffic.	Receipts per head.	Disbursements per head.	Fares per Mile.	Disbursements per head per Mile.	Gross No. of Travellers in a Carriage in a trip.	Mean No. of Travellers in a Carriage at one time.
	Annas.	Annas.	Pies.	Pies.	No.	No.
1st Class Passengers ..	51·7	96·3	12	22·2	3·02	·87
2nd Class Passengers ..	29·6	23·1	7	5·4	12·1	3·4
3rd Class Passengers ..	14·64	2·68	4	·73	120·7	29·5
Goods per Ton. . .	88·5	49·3	8 to 30	6·94	5·33	2·81

11. There are, however, some additions required to these rates to get at a correct estimate of the cost of haulage during the half-year. The stock of the Company is at present quite new, but it cannot be expected to last more than 10 years without complete renewal. One-tenth of its value ought therefore theoretically to be written off annually to provide a renewal fund for future years. In practice no Railway Company does form such a fund, nor perhaps is it either expedient or necessary. Traffic on all Railways increases with regular strides, and it is only just to the owners of the enterprize in its infancy, that they should be permitted to throw forward the burden of renewing their stock till the traffic had been properly developed and their enterprize arrived at maturity.

12. But to save discussion, the allowance for rolling stock will be entered, and to avoid unnecessary writing, the probable cost of working, viz. 80

per cent. in excess of the nominal rate will be placed, in dealing with the remainder of the calculations in juxtaposition with the nominal cost of haulage.

13. The rolling stock of the Company in use in traffic operations may be valued as follows:—

15 Engines at.....	£2,000 each	£30,000 or	{ for wear and tear in one-half year }		£1,500
5 First Class Carriages at .....	£ 525 do.	£ 2,600	do.	do.	£ 136
5 Composite at....	£ 505 do.	£ 2,525	do.	do.	£ 126
18 Second Class at..	£ 400 do.	£ 7,200	do.	do.	£ 360
41 Third Class at ..	£ 330 do.	£13,530	do.	do.	£ 676
4 Brake Vans at ..	£ 200 do.	£ 800	do.	do.	£ 40
12 Carriage Trucks and Horse Boxes at....	£ 200 do.	£ 2,400	do.	do.	£ 120
221 Waggons of kinds at .....	£ 150 do.	£33,150	do.	do.	£1,657
Total for half-year....					4,603

14. The wear and tear of Engines and Brakes is put down at Rupees 15,400 or about 6 per cent. on the gross expenditure. Adding this percentage to the rates entered in the preceding table, and dividing the cost of the different classes of carriages as in the following form, the modified rates are:—

Description.	Nominal cost per head. <i>Vide</i> Table in para. 10.	Probable cost per head after 80 per cent. is added on for sums unfairly charged to capital.	Engine Wear and Tear 6 per cent. on nominal prices.	Nominal cost with En- gines added.	Probable cost with do.	Wear and Tear of Carri- ages. Total cost.	Cost per head for Car- riages.	Total cost per head.	
								Nominal.	Probable.
1st Class Passenger	As. 96·3	As. 173·3	As. 5·7	As. 102·0	As. 179·0	Rs. 1,930	As. 18·7	As. 120·7	As. 197·7
2nd Class do. ..	23·1	41·58	1·38	24·48	42·96	4,230	10·0	34·48	52·96
3rd Class do. ..	2·68	4·82	0·16	2·84	4·90	6,760	0·22	3·06	5·20
Goods per Ton..	49·3	88·74	2·95	52·25	91·69	16,570	5·2	57·45	96·89



	Per Head per Mile.		Per Head per Mile.
	Disbursements.		Receipts.
	Nominal.	Probable.	
	Pies.	Pies.	Pies.
1st Class . . . . .	27· 8	45· 6	12
2nd Class . . . . .	8·11	12·46	5·4
3rd Class . . . . .	·83	1·41	4
Goods per Ton . . . . .	8·09	13· 6	12·36

15. There are still several disturbing elements in these calculations, but there are no means available for their elimination or for their correction. The First and Second Class charges are per head probably doubled by no credit being given for servants of the Railway Company and subordinates of the Post Office with mail bags travelling without payment in the carriages of those classes. Again, goods cost far more to load and unload than coaching traffic. But the Baroda Company draw only a very arbitrary distinction between goods and coaching charges in their accounts. For instance, in the half-year under notice, the Company divided all traffic charges equally between goods and coaching, although the receipts from the former were little more than a half of those from the latter, while the weight hauled was 40 per cent. greater than in the coaching branch. In this Memorandum the accounts of the Company have been treated as a whole, and the arbitrary division between goods and coaching has been neglected.

## G. I. P. RAILWAY.

16. On the Great Indian Peninsula the same course need not be adopted, the accounts of that Company are far better kept. Their division of charges may be accepted as approximately correct, and though they have not failed to take advantage of the opportunity afforded by the large capital expenditure in progress to debit to that head salaries of establishment, repairs, &c. properly chargeable to Revenue, still an addition generally of 10 per cent. to the results derived from their accounts will fully cover any errors due to improper appropriation.

17. The total dead load hauled on the Great Indian Peninsula was as follows, exclusive of Engines :—

Coaching ..... 48,900,118 tons.  
 Goods ..... 77,646,093 tons.

Total.... 126,546,211 tons.

**GREAT INDIAN PENINSULA RAILWAY.**

Description.	No. of Carriages.	Average Mileage	Average Weight.	Total No. of Tons hauled one mile.
	No.	Miles.	Tons.	Tons.
1st Class Carriages .....	12,129	70·3	6·25	5,329,179
Composite .....	10,601	70·3	5·7	4,219,128
2nd Class .....	15,652	70·3	6·1	6,712,017
3rd Class .....	59,233	70·3	5·1	21,236,807
Horse Boxes .....	4,093	70·3	5·15	3,292,075
Carriage Trucks .....	4,131	70·3	3·65	1,059,993
Brake Vans .....	13,496	70·3	7·4	7,020,889
Total Loading....	.....	....	....	18,900,118
Waggons .....	223,071	74·1	4·25	70,250,633
Brake Vans .....	13,487	74·1	7·4	7,395,460
Total Goods....	....	....	....	77,646,093

18. The total paying weight was as follows :—

Coaching ..... 3,206,807 tons.  
 Goods ..... 24,550,906 tons.

Total.. 27,757,713 tons.

## GROSS PAYING LOAD HAULED OVER ONE MILE IN TONS.

Description.	No.	Mileage.	Weight.	Gross load in Tons.
		Miles.	Tons.	
1st Class Passengers .....	13,187	43	075	42,528
2nd Class ditto .....	81,056	28	0625	141,648
3rd Class ditto .....	1,464,727	40	0.5	2,929,452
Luggage, say .....	....	....	....	30,200
Carriages, Horses .....	209,261	1	3	62,779
Total Coaching....	....	....	....	3,205,807
Goods .....	1	115.5	211523	24,430,905
Live Stock, say .....	....	....	....	120,000
Total Goods....	....	....	....	24,550,905

19. The total expenditure of the half-year may be divided as follows:—

	Coaching.	Goods.
	Rs.	Rs.
Locomotive according to train mileage ..	258,419	351,652
Maintenance according to train mileage ..	130,876	178,180
Traffic as per accounts. ....	108,757	224,981
General charges according to receipts....	33,710	66,701
Compensation .....	....	268,570
Total....	531,762	1,090,086

20. From these figures (*vide* Table B, in which they are placed in order) the undermentioned results are obtained:—

Description.	Receipts per Head.	Disbursements per Head.	Fare per Mile.	Expenditure per Mile per Head.	Gross No. of Travellers in Carriages in a trip.	Mean No. of Travellers together in Carriages.
	As.	As.	Pies.	Pies.	No.	No.
Passengers 1st Class ..	46·3	84	12	23·4	0·81	·5
„ 2nd Class ..	13·7	19·5	6	8·36	3·57	1·4
„ 3rd Class ..	6·86	2·7	2	0·81	21·7	14·1
Goods per Ton .	126 9	81·8	8 to 30 p.	8·5	....	Tons 1·4

21. A correction has now to be made for wear and tear of rolling stock on the principle stated in paragraph 12, but in the case of the Great Indian Peninsula, renewals have already commenced, and one Engine is rebuilt out of Revenue every half-year.

22. The Stock stood on the 31st December 1863 as below:—

87 Engines at.....	£2,000 each	£1,74,000	or for half-year	£8,700
33 First Class Carriages at .£	320	„	10,560	„ 528
17 Composite do. at .....	£ 190	„	3,230	„ 161
41 Second Class at .....	£ 220	„	9,020	„ 451
167 Third Class at .....	£ 150	„	24,050	„ 1,202
14 Fourth Class at.....	£ 125	„	1,750	„ 87
64 Horse Boxes at .....	£ 150	„	9,600	„ 480
126 Brake Vans at .....	£ 150	„	18,900	„ 945
244 Goods Vehicles at ....	£ 125	„	305,100	„ 15,255
Total.....				27,809

23. The wear and tear of Engines and Brake Vans, estimated for the half-year at 96,450 Rupees, will add nearly 6 per cent. to the rates already given in paragraph 20.

24. Making this addition, and also entering the cost of carriages, the result is—

Description.	Cost per Head.	Cost increased 6 per cent. for Wear and Tear of Engines.	Wear and Tear of Vehicles. Total cost.	Wear and Tear of Vehicles per Head.	Total per Head after all allowances.	Total per Head per Mile.
	As.	As.	Rs.	As.	As.	Pies.
1st Class Passengers ..	81	89.04	5,840	7	96.04	26.8
2nd Class do. ..	19.5	20.67	5,590	1.1	21.77	9.33
3rd Class do. ..	2.7	2.86	12,890	.14	3.00	.9
Goods per Ton. . . . .	81.8	86.7	1,52,550	11.4	98.1	Per Ton. 10.19

25. In paragraph 16 it was observed that an addition of 10 per cent. to the ascertained results would probably be sufficient to cover all deficiencies due to incorrect apportionment of charges between Capital and Revenue. The final results therefore are as follows :—

The cost of carriage of a—

1st Class Passenger	was	per	Head	per	mile	29.48	Pies
2nd Class	„	„	„	„	„	10.26	Pies
3rd Class	„	„	„	„	„	0.99	Pies
Goods	„	„	„	„	„	11.21	Pies

when compensation claims are included, and when excluded 9.16 Pie per mile. The receipts being for 1st Class passengers 12 Pie, for 2nd Class 6 Pie, for 3rd Class 2 Pie, and for goods 13.2 Pie.

26. But besides the causes noticed in the case of the Baroda Railway as vitiating the calculations of cost of carriage of 1st and 2nd Class passengers, there is on the Great Indian Peninsula another circumstance which affects very seriously the deduced results. The Great Indian Peninsula run a number of short trains to Mahim, and the constitution of these trains is widely different from the constitution of trains along other parts of the line—much larger number of 1st and 2nd Class travellers pass along this district, and—in consequence a far larger number of 1st and 2nd Class carriages are run than in ordinary trains. Again, the same differences exist, though to a comparatively smaller extent, on the line from Khandalla to Poona. But as the mileage of different classes of carriages is not separately shown, and the only mode in which an approximation to their mileage can be arrived at, is from the mean

train mileage, the calculated results are thrown considerably out by, a greater number of 1st and 2nd Class carriages being run in trains going short than in those going long distances.

## SIND RAILWAY.

27. The total dead load hauled on the Sind Railway was as follows :—

### DEAD LOAD IN TONS HAULED ONE MILE.

Description.	No.	Weight in Tons.	Mileage.	Gross load in Tons Hauled over one Mile.
	No.	Ton.	Miles.	
1st Class Carriages .....	5	6·7	8,097	271,219
Composite do. ....	6	7·35	1,302	57,418
2nd Class .....	7	6·85	9,076	435,194
3rd Class .....	14	6·00	19,521	1,639,764
Horse Boxes.....	6	6·6	2,239	88,661
Brake Vans.....	10	7·05	15,155	1,068,427
Goods Waggon's .....	341	5·00	11,899	20,287,795
Total.....	....	....	....	23,848,511

28. The total paying load was as follows :—

### PAYING LOAD IN TONS HAULED ONE MILE.

Description.	No.	Weight in Tons.	Mileage.	Gross Load in Tons Hauled over one Mile.
	No.	Tons.	Miles.	
1st Class Passengers.....	259	·075	83	1,612
2nd Class do. ....	3,854	·0625	76	18,306
3rd Class do. ....	65,441	·05	65	212,683
Carriages, &c. ....	....	16,000	1	16,000
Parcels .....	....	8,000	1	8,000
Merchandise .....	70,447	....	101·5	7,150,370
Railway Materials.....	7,839	....	34	266,526
Total.....	....	....	....	7,673,498

{ Mean  
Mileage  
94·7

29. On the Sind Railway a larger number of trains are run daily to take water and stone along the line, and to bring stone to the Harbour Works from the Quarries in the Hills. The vehicles used in these trains are loaded, unloaded, and repaired by the Departments using them. Their repairs, &c. form no charge on the general Revenues of the Company, but the expense of the Engine power is defrayed out of the Revenue Account. This expense is met by a small sum being debited to the Departments and credited to Revenue. This sum was for the half-year Rs. 64,945-8-6, but as 81,451 miles were run by Engines for the Departments at a cost of Rs. 51,161-4-0, the balance of profit Rs. 13,784-4-6 is not more than a fair equivalent for the wear and tear of the road.

30. It will be the simplest plan, and perhaps the most correct, to write off from both the debit and credit sides of the Revenue account the receipts and expenses of Harbour and Ballast Trains. Doing this and making up the same table (*vide C*) as for the other two lines, the cost of working is found to be as follows:—

Description.	Per Head.		Per Head per Mile.		Gross No. in Carriage per trip.	Mean load in Carriage or vehicle.	Fare per Mile in Pies.
	Receipts	Disbursements.	Receipts	Disbursements.			
	As.	As.	Pies.	Pies.	No. Travellers.	No. Travellers.	
1st Class Passengers.	125	220	18	31·8	·63	·50	18
2nd Class . . . . .	38·2	24·9	6	3·93	5·91	4·28	6
3rd Class . . . . .	17·62	5·97	3·25	1·1	23·26	14·4	3
		Per Ton				Tons	
Goods . . . . .	82·8	69·2	10·5	8·7	....	1·82	6 to 30
	82·8	69·2					

31. The rolling stock of the Company in-use, and the amount of wear and tear to be allowed for, is—

	000 each or in all	£44,000 or for half-year	£2,200		
1st Class Carriages. at £	350	ditto	£ 1,750	ditto	£ 87
6 Composite . . . . . at £	420	ditto	£ 2,520	ditto	£ 126
7 Second Class .. at £	320	ditto	£ 2,240	ditto	£ 112
14 Third Class .... at £	310	ditto	£ 4,340	ditto	£ 217
6 Horse Boxes . . . . at £	360	ditto	£ 2,160	ditto	£ 108
10 Brake Vans .... at £	290	ditto	£ 2,900	ditto	£ 145
341 Goods Waggon. at £	150	ditto	£51,150	ditto	£2,557

£5,552

32. The wear and tear of the Engines and Brakes is estimated at 23,450 Rs. or say 6 per cent. on gross expenditure. Adding on this sum as in the other cases together with the value of the carriages, the subjoined results are obtained :—

Description.	Expenditure per head from para. 30.	Expenditure after allowance of 6 per cent. for Engine, Wear and Tear.	Wear and Tear of Vehicles Total cost.	Wear and Tear of Vehicles per head.	Total cost per head after allowances for Stock.	Total cost per head per mile after allowances for Stock.
	As.	As.	Rs.	As.	As.	Pies.
1st Class Passengers..	2.20	233.2	1,290	79.6	312.8	45.2
2nd Class do. ..	24.9	26.4	1,960	8.1	31.5	5.44
3rd Class do. ..	5.97	6.33	2,170	.53	6.86	1.265
Goods per Ton . . . . .	69.2	73.35	25,570	5.22	78.57	9.95

33. To complete the calculation, it is necessary to make a correction for sums debited incorrectly to capital, ten per cent. on the rates shown in the previous columns will probably be enough to cover this contingency. The final results are therefore—

	Receipts per Mile.	Cost per Mile.
	Pies.	Pies.
1st Class Passengers . . . . .	18	49.7
2nd Class ditto . . . . .	6	5.98
3rd Class ditto . . . . .	3.25	1.39
Goods per Ton . . . . .	10.5	10.94

34. If the corrections made in this memorandum are based on a right principle, the Sind Railway does little more than pay expenses.



The expenditure on it, exclusive of Harbour and Ballast	
Trains, was .....	385,142 Rupees.
The allowance for wear and tear of stock for the half-year amounts to .....	55,520 Rupees.
The percentage entered to cover incorrect appropriation of charges to Capital is .....	44,066 Rupees.
	<hr/>
Total.....	484,728 Rupees.
The Receipts after reduction of Harbour and Ballast trains are .....	514,454 Rupees.
	<hr/>
Profit on Railway.....	29,272 Rupees.

35. Comparing the cost of carrying traffic on the different lines, and using for the Baroda Railway only the probable rate of expenditure—not the nominal—it appears that all three Companies lose largely in their First Class Passenger traffic; two lose nearly cent. per cent. on their 2nd Class traffic, while one only just clears expenses. All gain on their 3rd Class traffic; the Great Indian Peninsula on a two pie fare makes 100 per cent. profit; the Baroda on a 4 pie fare makes 180 per cent., and the Sind on a three pie rate makes 130 per cent. In goods the Great Indian Peninsula cleared 16½ per cent. on their expenses, and would have made 44 per cent. had they not sustained such heavy losses on the Ghauts and by fires. The Baroda Company lost 10 per cent. on all goods they carried. The Sind 4 per cent.

Description of Traffic.	G. I. P. Railway per Mile.		B. B. & C. I. Railway per Mile.		Sind Railway per Mile.	
	Receipts. Pies.	Expendi- ture. Pics.	Receipts. Pies.	Expendi- ture. Pics.	Receipts. Pies.	Expendi- ture. Pics.
1st Class Passengers per head .....	12·8	29·48	12	45·6	18	49·7
2nd Class Passengers per head .....	6	10·26	5·4	12·46	6	5·98
3rd Class Passengers per head .....	2	0·99	4	1·41	3·25	1·39
Goods per Ton.....	13·2	11·21	12·36	13·6	10·5	10·94
		or 9·16 ex- clusive of Compensa- tion.				

36. Comparing loads, it is perceived that the Baroda Company fill their carriages far better than the other two Railway Companies. Their traffic is more evenly distributed, as several large towns lie close together on their line, and there is no one great centre of trade, while the goods traffic conveyed upwards and downwards is nearly equal in bulk. On the Sind the goods traffic is almost wholly borne seaward, and on the Great Indian Peninsula fully two-thirds of it is carried in that direction.

MEAN LOAD PER CARRIAGE OR WAGGON.

Description.	G. I. P.		BARODA.		SIND.	
	No. each carriage can carry.	No. carried on an average.	No. each carriage can carry.	No. carried on an average.	No. each carriage can carry.	No. carried on an average.
1st Class passengers ..	20	5	20	87	20	5
2nd Class do. ..	40	1.4	40	3.4	40	4.28
3rd Class do. ..	50	11.1	60 to 100	29.5	60	14.4
	Maximum	Tons	Maximum	Tons	Maximum	Tons
Goods .. . . . .	6 Tons.	1.1	6 Tons.	2.81	6 Tons.	1.82

37. It is difficult to draw conclusions from the results brought out in this paper, more especially when the uncertainty in which some of the premises are involved is taken into consideration. But there are two points on which there can be no doubt. The accommodation given to 1st Class passengers is out of all proportion to the payments. The fares of that Class ought at least to be doubled in justice to the remainder of the community. This measure would have the effect of improving the 2nd Class passenger receipts, and its prejudicial action on short and pleasure traffic might be obviated by giving return tickets at one and one-third the single fare, and extending the periods during which those tickets could be used.

38. The charges for goods are far too low. An increase of 50 per cent. all round in rates would be beneficial, and might convert the goods traffic into a paying traffic, which at present it can hardly be deemed. There is not much fear of this increase driving off any large portion of the goods traffic from the Great Indian Peninsula and Sind Railways. The late enormous rise in prices

\* According to carriage.

of labour and grain, and the general introduction of toll bars on roads, will more than counteract the effects of the proposed augmentation of Railway rates. On the Baroda and Central India Railway an increase in goods charges may act injuriously, on account of the great competition to which the traffic on that line is exposed, in consequence of its being strictly a *Coast* line, and of its crossing so many navigable streams.

39. The third class traffic on all three lines is the principal source of profit. But none of the Companies carry more than one-third the full load in their carriages. They might all largely increase their third class passenger traffic with but a very slight increase in their expenditure, while any great reduction in the numbers of that class could not be met by a corresponding reduction in cost of haulage. Except on the line from Bombay to Poona, there is not as a rule more than one passenger train run each way daily over the Railways in this Presidency, and even these trains require to be made up with goods vehicles to form a full load for an Engine. Making up trains with goods waggons is a measure open to grave objection on the ground of safety, and any alteration that would tend to perpetuate the system, ought to be resisted in the interests of the Public.

40. There is another point elicited in this Memorandum of some use for purposes of comparison between the working cost of the different lines, viz. the cost of haulage. It is not necessary for this comparison to consider the corrections made in the accounts of the Great Indian Peninsula and Sind Railway Companies. It will be sufficient to add on to the weight stated to have been hauled by the Baroda Company the weight of their Brake Vans (excluded from their returns) and to add 70 not 80 per cent. to their expenditure for incorrect appropriation of charges between Capital and Revenue, &c.

## BARODA RAILWAY.

Total Dead and Paying loads *vide* Table A . . . . . 19,484,600 tons.

No.    Milage.    Weight.

Brake Vans 730 × 180 × 7·4 . . . . . 972,360 tons.

Total load hauled . . . . . 20,456,960 tons.

Expenditure nominal *vide* Table A. . . . . 254,000 Rs.

Addition of 70 per cent. . . . . 177,800 „

Total probable expenditure . . . . . 431,800 Rs.

41. The cost of the haulage on the three lines stands as follows :—

Great India Peninsula Railway load Hauled per Rupee of expenditure Passenger Trains .....	98 tons.
Great India Peninsula Railway load Hauled per Rupee of expenditure Goods Trains .....	124 „
Baroda Railway • nominal load Hauled per Rupee of expenditure Goods Trains .....	80 „
Baroda Railway probable load Hauled per Rupee of expenditure Goods Trains .....	47 „
Sind Railway load Hauled per Rupee of expenditure Goods Trains .....	82 „

(Signed) J. S. TREVOR, Captain, R.E.,  
Deputy Consulting Engineer for Railways.

*Bombay, 12th April 1864.*

*P.S.*—The average train loads and of loads on the three lines is also an interesting point of comparison.

	Average weight of Vehicles in Trains Ton.	Average weight of Paying Loads in Trains Ton.	Total in Train Tons.
Baroda Railway .....	116	50	196
Sind Railway .....	152	49	201
G. I. P. Railway.. { Coaching .....	173	11	184
{ Goods .....	201	63	264
{ Mean .....	190	41	231

**TABLE A.**  
**BOMBAY, BARODA, AND CENTRAL INDIA RAILWAY.**

Description of Traffic.	Tons-Weight hauled.			Receipts in Rupees.	Expenditure in Rupees.	Profit and Loss.		Profit and Loss per head.		REMARKS.
	Dead Weight.	Paying Weight.	Gross Weight.			Profit, Rupees.	Loss, Rupees.	Profit, Annas.	Loss, Annas.	
	Tons.	Tons.	Tons.	Rupees.	Weight hauled 57 tons for One Rupee.					
1st Class Passengers ..	776,536	6,575	783,111	5,461	10,170	..	4,709	..	447	
2nd Class Passengers ..	731,234	21,450	752,724	12,505	9,770	..	5,735	..	619	
3rd Class Passengers ..	4,304,016	882,015	5,186,031	356,819	67,350	293,469	..	119	..	
Road Vans Parcels ....	328,509	126	328,626	17,015	4,220	12,815	..	..	..	
Horse Boxes .....	476,325	15,828	492,163	6,595	6,330	209	..	..	..	
Miscellaneous .....	.....	.....	.....	3,787	.....	..	3,787	..	..	
Total Coaching .....	6,616,609	926,041	7,542,219	412,219	97,910	314,309	..	Per Ton.	..	
Goods and live Stock ..	7,624,000	4,318,383	11,942,383	278,908	155,050	123,818	..	..	59.56	
Grant Total .....	14,240,609	5,244,427	19,484,602	691,127	254,000	437,156	..	..	..	
					Error due to using round numbers.		Error due to using round numbers.			

**TABLE B.**  
**GREAT INDIAN PENINSULA RAILWAY.**

Description of Traffic.	Tons-Weight hauled over one Mile.			Receipt in Rupees.	Expenditure in Rupees.	Profit and Loss		REMARKS.
	Dead Weight.	Paying Weight.	Gross Weight.			Profit, Rupees.	Loss, Rupees.	
	Tons.	Tons.	Tons.	Rupees.	Rs. at 95 Rupees to the Rupee.	Profit, Rupees.	Loss, Rupees.	Profit and Loss per ton.
1st Class Passengers ..	6,745,555	42,527	6,788,082	38,161	69,250	...	31,059	...
2nd Class Passengers ..	9,344,799	141,848	9,486,647	68,574	98,840	...	29,880	37.7
3rd Class Passengers ..	21,236,807	2,929,452	24,166,259	6,28,221	2,46,590	...	...	5.9
Luggage .....	7,030,889	30,230	7,061,119	1,01,177	71,940	...	...	1.7
Carriages, Horses and Dogs.....	4,352,068	62,779	4,414,847	26,157	45,010	...	18,852	...
Total Coaching .....	18,900,118	3,206,897	22,107,015	8,63,577	5,51,752	...	73,867	...
Goods and live Stock ..	702,506-33	24,430,906						Per Ton 44.95 and Excluded value of 6 in operation 65.3
Brake Vans Goods .....	7,395,460	120,000						
Total Goods.....	77,646,093	24,550,906	102,196,999	6,90,618	10,00,686	6,90,632		

**TABLE C.**  
**SIND RAILWAY.**

Description.	Dead Weight in Tons.	Paying Weight in Tons.	Gross Weight in Tons.	Receipts in Rupees.	Expenditure in Rupees.	Profit and Loss.		Profit and Loss per head.	
						Profit, Rupees.	Loss, Rupees.	Profit, Annas.	Loss, Annas.
					Haulage at 82 Tons to the Rupee.				
1st Class Passengers .....	290,388	1,612	292,000	2,023	3,516	....	1,538	....	95
2nd Class do. ....	473,473	18,306	491,779	9,207	5,997	3,210	...	13 3	..
3rd Class do. ....	1,639,764	212,683	1,852,447	66,680	22,591	44,089	..	11 65	..
Carriage and Horses .....	88,664	16,000	104,664	2,097	1,276	821	...	....	..
Parcels and Luggage .....	1,068,427	8,000	1,076,427	7,788	13,127	....	5,339	....	..
Goods, including Railway Materials	20,287,795	7,416,895	27,704,691	405,438	3,38,530	66,848	..	13 67	..
Miscellaneous .....	.....	.....	.....	21,215	.....	21,215	..	....	..
Total ...	23,848,511	7,673,497	31,522,008	514,458	3,85,142	1,36,183	6,877	....	..

## MEMORANDUM BY CONSULTING ENGINEER.

The Government of India having desired a calculation to be made of the actual expense of the haulage of every item of Traffic on each of the Railways of this Presidency, the half-year ending June 30th, 1863, was taken for the requisite data, and Captain Trevor has prepared a Memorandum, which has been printed, and can be forwarded to the Government of India.

2. The figures deduced by him, though not absolutely correct, may be considered relatively correct, and are at all events on the safe side.

3. There is an uncertainty about the mileage run by each class of carriage, for the Companies' returns do not allow for the case of some carriages being left behind at a Station and afterwards added to the return train. The Engines are under-estimated, their cost being nearer £3,000 than £2,000 their life, and that of the stock are mere assumptions.

4. The arbitrary addition to the working expenses of the Baroda Railway on account of maintenance may have been quite legitimate, for even their London Board admitted that those charges were under-estimated. Some small addition was allowable to the Great Indian Peninsula working expenses for charges improperly borne by Capital; but Captain Trevor, in adding 10 per cent. of their gross expenditure (16 Lacs including compensation), has overdone this, for only in some of their establishments were charges understated, not probably exceeding Rupees 50,000; as to the Sind Railway no percentage need have been added, for but little is charged to Capital.

5. However, for comparative results, and as very close and safe approximations to truth, they may be used, and the following points deserve notice.

6. The Baroda Line carries a larger proportion of paying to dead load than the others. The figures are in that line  $5\frac{1}{4}$  millions of tons hauled over one mile to  $14\frac{1}{4}$  of dead load, or 1 : 2·7. In the Great Indian Peninsula the same quantities are  $27\frac{1}{4}$  to  $126\frac{1}{4}$ , or 1 to 4·5; in the Sind 7·7 millions to 23·8, or 1 : 3·1.

7. But on the Baroda Line, strange to say, much lighter trains are run than on the others, the figures for the average gross weight of trains being—Baroda 196 tons, Great Indian Peninsula 231 tons, Sind 201 tons. The cost of haulage too on the Baroda Line is greater as shown in these figures:—

	1st Class. Pies.	2nd Class. Pies.	3rd Class. Pies.	Goods. Pies.
Baroda .....	45·6	1·5	12·4	13·6
Great Indian Peninsula .....	29·5	10·3	1·0	9·3
Sind .....	49·7	6·0	1·4	10·9



Another point of comparison is the amount of work done. The following figures show the number of miles trains were run during the half-year per mile of Line open :—

Baroda ran . . . . . 562 miles, *i. e.* about 3 in two days each way.  
 G. I. Peninsula ran . . 1,340 „ about 3½ daily each way.  
 Sind ran . . . . . 1,500 „ about 4 daily each way.

The Baroda Railway is short of stock, but these figures would imply that full work is not taken out of what they have; this Railway thus runs fewer trains than the others, their trains are lighter and their cost is greater, though, considering their better gradients, they ought to run heavier trains at less cost than the others.

8. Captain Trevor also points out how every Company loses by the 1st Class Traffic, and recommends the fare to be doubled. I cannot support this; on the Great Indian Peninsula Railway a 2-anna fare and a 1½-anna fare were tried, and the result was that persons who could well afford 1st Class fares saved their money and travelled 2nd Class.

9. Mr. Taylor, in order to remedy this loss by 1st Class Traffic, recommends a low rate, on the idea that increased numbers would follow, but this Class has not, like the 3rd Class, a large area to draw from. Very few 1st Class, and not many 2nd Class, would in India be induced to travel merely because the fare was low. The total number of 1st and 2nd together does not much vary; by a change of fare there is only a shifting of a large number from one class to the other.

10. By Captain Trevor's policy a large number of 1st Class passengers would become 2nd, and the former would probably be so reduced that the Company would not be put to the expense they now are in providing carriages costing £400 each, hauling them about when they weigh 7 tons, and carry only 8 of a passenger; but 1st Class Passengers, though they are very unprofitable to the Railway (each one causes the Company a loss from 4 to 8 Rupees) make more outcry than any other, and they would consider themselves robbed of their privileges if they were crowded, or if carriages were not always provided on the chance of a casual passenger requiring accommodation.

11. On Mr. Taylor's plan the Company would lose even more than they now do, for any increased number coming to the 1st Class would only diminish the 2nd Class, which is not so unprofitable.

12. I think a small increase, say 25 per cent., would be so much saved from the present loss, while it would not derange the present system by driving people into 2nd Class Carriages, the consequences of which again would be, that the Company would withdraw 1st Class Carriages altogether.

13. In Second Class the Companies do not lose so much, and the Sind Railway makes a small profit, this is due to the expenditure being smaller, and the paying forming a better proportion to the dead load than in the others, not to the actual receipt being better.

14. Their management is probably not so liberal in carriages; 4·3 on an average are carried on the Sind line in a carriage; in the Great Indian Peninsula only 1·4, this is probably due to so many in the latter Railway being taken up with mails.

15. In goods neither Baroda nor Sind pay expenses; in Sind this was known before, and been remedied by the abolition of the first or lowest classes rate. It was unexpected in the Baroda Line, for their Traffic is so well balanced, that very few empties are run, they carry on an average 2·8 tons in a waggon; the Great Indian Peninsula only 1·4; the Sind 1·8.

16. On all three some increase in the rates would be fair. The value of money has fallen considerably since their rates were fixed 4 years ago. Companies have to pay higher for every article consumed, for all labour they employ, while the value of the goods carried has so increased, that not only can they easily bear a higher freight, but when damaged, the Company becomes liable for much larger sums than formerly.

17. There should be no such rate at 8 pies when the cost of haulage is each at least 10 pies per ton per mile, and when Companies charge that rate they do not really receive what that rate represented four years ago.

18. But after all, 3rd Class Passengers is the traffic where all Indian Railways really make the profit, and that is the mine to be worked with certain success.

19. The Great Indian Peninsula carry them at 2 pies, at a cost of 1 pie. The Baroda at 4 pies, at a cost of 1·4 pie; the Sind at 3½ pies, at a cost of 1·4.

20. In goods, besides the cost of haulage of the actual weight, sheds have to be built at great cost, there is compensation for damage by fire and rain, loss by speculation, establishment to be kept up for booking, weighing, sorting, loading, there are law expenses, there is (except on the Baroda Line) the bad economy in working the traffic due to its not being evenly balanced, there is the necessity of keeping a larger stock for the same tonnage, as more time is required for loading and unloading.

21. In 3rd Class traffic, besides providing and hauling the carriages and their loads, there is no expense but a Ticket Clerk and some tickets.

22. The present receipts could be improved by better arrangements in not taking empty carriages long distances. On the Great Indian Peninsula and Sind Railways carriages capable of holding 50 do not carry more than

14, while it is notorious that on some points of the Great Indian Peninsula Line the carriages are over-crowded and passengers often left behind ; on the Baroda Line some 3rd Class carriages hold 60, others 100, but the average load is 29.

23. On the Baroda Line if a reduction was made from 4 pies to 3 pies, the experience of the Great Indian Peninsula would warrant a prediction that the numbers would be doubled ; and, if so, the gross receipts would be increased 50 per cent. and net receipts more than 30 per cent. Even with their present stock they might make it available to do much more work by running more trains and filling them oftener ; for, as shown above, 3rd Class passengers are very easily loaded and unloaded, and without going the length of advising an increase on the Great Indian Peninsula Railway of the 3rd Class fare, which now brings in a clear profit of 50 per cent. to the extent of 3 pies, yet I think some increase might be profitably made which would not diminish the number of passengers, either by making it 3 pies with the privilege of half price return tickets, or 3 pies for all distances under 100 miles, the excess over 100 miles being charged at 2 pies.

24. This would encourage the lower classes to travel longer distances, which they would not be able to do if the fare was raised to 3 pies.

H. RIVERS, Lieut. Colonel,  
Consulting Engineer for Railways-

*Bombay, 29th April 1864.*

No. 1017 of 1864.

RAILWAY DEPARTMENT,  
3rd May 1864.

To the SECRETARY to the GOVERNMENT of INDIA, Simla.

SIR,—I am directed to acknowledge receipt of Government of India's letter, 18th April No. 15R, and to express regret of this Government for the delay that has unavoidably occurred in submitting the Return called for.

The Memorandum prepared by Captain Trevor, with a Note thereon by the Consulting Engineer, are herewith submitted. This Government considers these Memoranda so clear, and of so much general interest, that they have directed their publication as a Government Selection.

I have the honour, &c.  
(Signed) H. RIVERS, Lieutenant Colonel,  
Secretary to Government.





